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EDUCATION
FROM A NATIONAL STANDPOI

INTERNATIONAL EDUCATION SERIES.

EDUCATION
FROM A NATIONAL STANDPOINT.

40438

BY

Jules Émile

ALFRED FOUILLÉE.

TRANSLATED AND EDITED, WITH A PREFACE,
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TRANSLATOR'S PREFACE.

It is now more than three centuries since the "uprising and reinstatement of Hellenism," with its new conceptions of life, revolutionized the thought of Europe. To the change in the existing order of things at that time we have a parallel at the present moment. The last half-century has seen the triumph of the scientific method, and the impulse given to modern thought by the invasion of the positive spirit has produced a *malaise pédagogique*, which is now reaching an acute stage. The spirit of reform is in the air. The question of the retention of Greek at the universities is but a ripple of the great wave that seems ready to burst upon us and to obliterate the characteristic features of our national system of education. The pressure of a complex civilization has introduced new elements into the problems perplexing the statesmen of the day, and has given fresh impetus to the impending change. A glance at the various forms of the educational systems obtaining in Europe and America is sufficient to betray to the observant eye how near to the verge of chaos we are standing. Questions of special interest are constantly arising, and in the excitement of the moment we are apt to place them in a false perspective, to exaggerate or to minimize their relative importance, and so we run the danger of ignoring or treating with indifference those fundamental principles which are of infinitely greater importance than anything of merely temporary interest. The present conflict between the claims of a literary and of a scientific curriculum in our secondary schools is an instance in point. Everywhere we see the tendency of scientific and commercial studies to thrust what is more disinterested into the background. Grave as were the faults of the old *régime*, an impartial and dispassionate survey of the results of the purely scientific system does not seem to warrant the perfervid encomiums of its supporters. The investigations of Mr. Glazebrook, the Head Master of Clifton, into the post-university career of science “ scholars ” at Oxford and Cambridge, lead him to conclude that there is “ a very marked advantage on the side of those who had the more liberal education.” * Similar inquiries elsewhere lead to the conclusion that the powers of observation, correlation, and inference are not as fully developed by this training as was anticipated, and that the mere erudition so frequent and so fatal in the classical system is equally fatal and equally frequent in a scientific training. It looks as if the “ modern ” system is after all but a system of imparting information—“ the least part o knowledge,” as Butler tells us. This is the kernel the whole matter. And, if it be true that “modern” system effectually stifles what is m important than knowledge itself—the desire for kn ledge—the indictment is a serious one. The result of this feeling is that, abroad, at any rate—for in this country we move slowly—there is felt the discomfort that, as Locke says, underlies every desire for change. France, Germany, and Italy are convulsed by the shock of the two opposing forces of Humanism and Realism. In this country we seem quite content with having supplemented the "classical side" by a "modern side," and we cheerfully throw the *onus* of choice between these alternatives upon the parents—who in most cases are the least competent to make that choice wisely. But abroad, the State has organized the secondary education of the whole community, and the theoretical and practical difficulties of an exceedingly complex problem have been forced upon the attention of statesmen who, with or without the necessary qualifications, have had to attempt at least a provisional solution. At home the voice of Matthew Arnold has been crying to us from the wilderness: Organize, organize your secondary education! Your middle-class education must be a public service with the organization and guarantees of a public service, with the honest, single-minded, logically pursued aim of efficiency. But our Cassandra was ignored. Alone of the great European powers we leave our secondary education to the energy and enterprise of the individual. We have no definite centre of responsibility. Our efforts are spasmodic and ill-directed. We have devised a scheme of technical instruction which can effect but little until our system of primary instruction is reformed and extended, for the former is intended to aid the masses whose minds have been lying fallow from the age of twelve or thirteen. The University Extension scheme has failed to touch the masses for the same reason; it brought "caviare" to "the general" by means of a picked body of men who, as a rule, are too inexperienced and unsympathetic to be able to make the untimely food palatable. Not attempts such as these, not people's palaces, polytechnics, and the host of forms which philanthropic endeavour has assumed in our large towns, are the crying need of the hour, but a sound organization of our secondary education. The longer our recognition of this is postponed the more difficult and costly will action become. When we do recognize it, our statesmen will have to discuss in sober earnest the question which is being fiercely debated at the present moment by the statesmen, *savants*, and *littérateurs* of Europe—What is the proper basis of a secondary education?

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* Thirteen Essays on Education (“ The Universities and Speciali p. 231).

The rivalry between the *gymnasium* and *realschule* has its counterpart in France in the conflict between the classical *lycées* and the *écoles spéciales.* The struggle has been intensified in the latter country by the descent into the arena of a third group of combatants, advocating what is not a compromise bu
a rival scheme, under the name of *enseignement cl*
sique français. The parties engaged in this triangu
duel are by no means agreed, even when they prof
to be directing their efforts to the same end. S
vigorously condemn any form of education that i
based upon both Greek and Latin. Others, t
gratification of the clergy, pronounce boldly in
of a radical change, which must in the long
volve the relegation of both Greek and Latin
écoles libres. M. Bigot, for example, insists o
the same bifurcation as that obtaining in
viz. an *enseignement classique* of Greek a

of Latin alone. So far, all indignantly denounce the technical or professional side proposed for the secondary schools.* M. Dietz would make "modern humanities" the basis of all secondary education.† Most daring of all is M. Raoul Frary,‡ and he is the more formidable because, a scholar of exceptional brilliancy, he fights with weapons forged in the armoury of his opponents. Nothing will content M. Frary but the suppression of Latin and Greek. *Delenda est Carthago!* Such are a few instances of the ideas afloat in France at the present moment. But these, on the whole, treat the subject far too much from the utilitarian point of view. Looking at the question of education from a wider standpoint, the late M. Guyau has joined in the discussion with a contribution which, from the very nature of its conception, has given a higher tone to controversy.§ The present volume is so closely linked with that of M. Guyau, both in object and method, that in attempting to give the reader an idea of the part played in the discussion by M. Fouillée, it will perhaps be advisable to state the scope of the work of the younger philosopher.

In all that Guyau wrote he kept one single end in view, "the linking together of ethics, æsthetics, and religion with the idea of *life*—life in its most intensive, extensive, and therefore most fruitful form." To him pedagogy is "the art of adapting new generations to those conditions of life which are the most intensive, ex-

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* "Questions d'enseignement secondaire" (1886).

† "Études Classiques sans Latin" (1886). "Les Humanités Modernes" (1887).

‡ "Question du Latin" (1886).

§ "Education and Heredity. A sociological study." Contemporary Science Series. 1891. (Walter Scott.)

tensive, and fruitful for the individual and the species.” The claims of the individual and of society are complementary, each is necessary to the fullest development of the other. The object of all education is simultaneously individual and social, it is “the search for means to bring the most intensive individual existence into harmony with the most extensive social life.” It therefore has a triple end: (1) “The harmonious development in the individual of all the capacities proper and useful to the race;” (2) “The development in the individual of such capacities as are peculiar to him,” as long as such development “will not disturb the equilibrium of the organism;” (3) “To arrest and check the tendencies and instincts which may disturb that equilibrium, *i.e.* to aid heredity in proportion as it tends to create permanent superiority in the race, and to resist its influence when it tends to accumulate causes pernicious to the race itself.” The freshness and ingenuity of Guyau's treatment of the problem in this form can be readily imagined by those who are familiar with his works on other subjects. An ardent evolutionist, he carries his doctrine to its logical consequences. “The whole system of education must be directed towards th
maintenance and progress of the human race
“Every individual is a temporary depository of p
of the force inherent in the race;” and Guya
special claim to attention lies in his endeavour
show that the system of education best adapte
conserve the force of the race is also the best ada
to conserve the force stored up in the indiv
The heads of the argument may be roughly st
follows. The individual is a society composed
stituent cells; hence “life” and “social life” are

vertible terms. The maintenance of the solidarity between the individual and the race is the only hope for the future of both. The education best adapted to secure the maintenance of this solidarity, upon which the persistence of the race depends, is that based upon the *Humanities.* The modern system, based upon science, is sterile, because it neglects the humanities contained in science, and science is only valuable from the humanities contained in it.

So far are we led in M. Guyau's posthumous work. In M. Fouillée's opening chapters we find a brilliant application by analogy of the doctrine of *selection* to physical, intellectual, and moral education—an application as novel, ingenious, and stimulating as the analogical application by Guyau of the principle of "rotation of crops" in agriculture to intellectual education.* Particularizing from the race to the nation, M. Fouillée treats the subject of secondary education from the national standpoint. But although he has narrowed down Guyau's main thesis, the author does not present us with a mere supplement to "Education and Heredity." An experienced teacher, and one of the leading philosophers in France, his opinions on the burning question of the hour acquire additional weight at the present crisis. His eloquent exposition of the *humanities* contained in science,† his crushing indictment of the utilitarian tendency that confounds education with instruction, his damaging criticism of the educational doctrines of Mr. Herbert Spencer and Professor Bain,‡ his able and temperate exposure of the fallacies that have found utterance during the present controversy, his luminous and convincing restatement of the arguments for the retention of the *humanities* as the basis of any system of secondary education, his grasp of detail as shown in the tables throughout the volume, and finally, the fact that the recent changes in the curriculum of the secondary schools in Italy have been on the lines laid down in this volume by M. Fouillée, may well give us pause.*

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* "Education and Heredity," c. viii.

† It was once said of Professor Tyndall's lecture on "The Scientific Use of the Imagination," that it was really a lecture on "the imaginative use of science." What was meant as a quip had a mine of truth in it.

‡ The student should read in this connection M. Thamin's excellent monograph, "Education et Positivisme" (1892).

I must express my deep sense of the courtesy and generosity of M. Fouillée, who gave me *carte-blanche* to retrench the French edition where necessary, and to adapt it for the English and American reader. After due consideration I decided to omit just so much of the detail as would be irrelevant to the reader in this country or America, and also whatever would necessitate voluminous elucidation in footnotes. The main argument remains intact. The reader should bear in mind that the *baccalauréat* corresponds to the degree examinations at the British universities rather than to their matriculations. Wherever time tables are given, I have added the average age of t classes for which they are intended. M. Fouill tables can therefore be readily applied to boys of same average age elsewhere. I have taken liberty of inserting a few references that m useful to the student of pedagogy.

W. J. GREENSTR

THE MARLING SCHOOL, STROUD,
March, 1892.

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* The Italian government has practically adopted th suggested by M. Fouillée between the conflicting claims *and natural science,* and has reorganized and co-ordina *taught in its secondary schools.*

CONTENTS.

PAGE
Introduction 1

BOOK I.

EDUCATION AND SELECTION FROM THE NATIONAL POINT OF VIEW 10

CHAPTER I.

Power of Education and of Idea-forces—Suggestions—Heredity 10

CHAPTER II.

Physical Education from the Point of View of Evolution and Selection 28

CHAPTER III.

The Objects of Intellectual and Moral Education from the National Standpoint 33

CHAPTER IV.

The Selection of Superiorities—Rational Means Available. 41

PAGE

CHAPTER V.

Utilitarian Education and True National Interests ... 47

BOOK II.

SCIENTIFIC HUMANITIES FROM THE NATIONAL STANDPOINT 54

CHAPTER I.

The Humanities and their General Object 54

CHAPTER II.

Faults in our Teaching of Science 59

CHAPTER III.

The Philosophical Reform of Scientific Studies—Their Transformation into Humanities 71

BOOK III.

THE CLASSICAL HUMANITIES FROM THE NATIONAL STANDPOINT ... ...

CHAPTER I.

Of the Parallel between Human Evolution and Individua Evolution ... ...

CHAPTER II.

Great National Interests and the Classical Human

PAGE

BOOK IV.

A "MODERN" EDUCATION FROM THE NATIONAL STANDPOINT 136

CHAPTER I.

UNITY IN SECONDARY EDUCATION 139

CHAPTER II.

MODERN LANGUAGES AND LITERATURE 153

CHAPTER III.

FRENCH "SPECIAL" INSTRUCTION, AND THE GERMAN REAL-SCHULE 174

CHAPTER IV.

PROPOSED REFORMS 181

BOOK V.

PHILOSOPHY, ETHICS, AND SOCIAL SCIENCE FROM THE NATIONAL STANDPOINT 193

CHAPTER I.

MORAL AND SOCIAL SCIENCE IN THE SCHOOL THE ONLY SOLUTION OF THE PROBLEM 195

CHAPTER II.

MORAL AND CIVIC INSTRUCTION 204

CHAPTER III.

HISTORICAL AND POLITICAL INSTRUCTION 218

PAGE

CHAPTER IV.

Literature and Æsthetics 226

CHAPTER V.

Instruction in Philosophy 246

CHAPTER VI.

The Necessity of Philosophy to the Teacher 256

CHAPTER VII.

Examinations at the End of School-life—Abiturienten-examen 261

CHAPTER VIII.

Philosophy, and its Place in Higher Education 264

CHAPTER IX.

Conclusion 268

Appendix I. 293
Appendix II. 31
Appendix III. 3
Index 3

EDUCATION
FROM A NATIONAL STANDPOINT.

INTRODUCTION.

A SOCIETY has been formed in France for the promotion of a physical *renaissance;* it is a matter of general opinion that combination is no less necessary for the promotion of an intellectual and moral *renaissance.* Educational questions are the order of the day; rarely have so many books been published with reference to problems in pedagogy. Most of the controversies relative to this vital question of education seem to me to arise from the fact that we fail to reach a sufficiently general point of view, *i.e.* the national, international, or even *ethnical.* Among books recently published and deserving of notice on various grounds, there is, I may almost say, only one in which the author places side by side the two essential factors in this problem—the individual and the race.* On this, as on all great questions of practical philosophy, Guyau has left his mark. His principal claim on our attention will be that he has treated from the "sociological" point of view the problems, not only of morals, but also of religion, æsthetics, and education. He has treated the question from the highest standpoint, and has stated it in a strictly scientific form: "Given the hereditary merits and faults of a race, how far can we modify existing heredity by means of education for the benefit of a new heredity?" For the problem is nothing less than this; it is not merely a matter of the instruction of individuals, but of the preservation and improvement of the race. Education must therefore be based upon the physiological and moral laws of the culture of races. These laws are not considered unworthy of attention when we are dealing with the breeding of animals; but they are set aside or forgotten when we are dealing with man, "as if the education of humanity only concerned individuals." The ethnical is the true point of view. By means of education we must create such hereditary tendencies as will be useful to the race, both physically and intellectually. True education is that which, instead of sterilizing the brain by the exhaustion of its force, makes it more and more fruitful by the development of varied capacities in the midst of varied environments.

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* "Education and Heredity:" Contemporary Science Series.

In the following pages I propose to take a more restricted view of the problem than that taken by Guyau; I shall devote myself in particular to educational questions, which I shall discuss from the national point of view. The nation is an organism endowed with a kind of collective consciousness, although not concentrated in an *ego*; I therefore take everything that maintains in a nation continuity of character, mind, habits, and aptitudes—in a word, a national consciousness and a national will—as a form of organic heredity and identity persisting from age to age. That strange saying of old Heraclitus has been rightly applied to the solidarity of the generations of mankind: "The death of the gods is our life;" *i.e.*, according to ancient modes of speech, we are living on our ancestors, on the moral forces incarnated in the history of our country, as well as on the natural forces incorporated in its climate and in its soil. In *my opinion*, the final goal of education is to secure, not only the development of the race, but also that of our nationality, our native country.

Among the means of attaining this end which we have to consider, the first is *selection*. The history of humanity exhibits the struggle of races, nationalities, and individuals, not only for existence—in the oft-quoted phraseology of a narrow interpretation of Darwinism—but also for vital progress of every kind, including intellectual, æsthetic, and moral life. Much is said in these days about the struggle for existence. There is a hasty and heedless application to humanity of the laws formulated by Darwin for the animal kingdom. The metamorphoses of selection, as it passes from the domain of brute force to that of intellectual and moral force, are ignored. All the more or less shocking deductions drawn from Darwinism are due to this logical blunder, and consist in the belief that the triumph of the most powerful force is always equivalent to that of the most brutal force. It is of importance, therefore, to note the analogies and differences between natural and social selection; these I shall attempt to point out. In the first place, we must endeavour to ascertain the true power and limits of education and of instruction, strictly so called; we shall investigate how far it is true that "ideas lead the world," and how a selection of ideas is primarily affected in the brain by education, *i.e.* what we may call psychological selection. Then we shall discuss social selection and the conditions under which it will produce such a picked class as is necessary to the progress of the whole race. Here the doctrine of evolution will assist us to determine the most essential objects of that education which has as its aim the perfection of the species.

Having thus laid down our general principles, we shall draw our theoretical and practical inferences as far as reform of the educational systems of Europe is concerned. The more civilization advances, the more pre-eminence lies with everything that is organized, systematized, and co-ordinated in hierarchic order. From the military point of view, for instance, the more numerous the army, the more essential is the unity and subordination of those parts which are distinctive of a living being. From the political point of view, it is equally clear that organization is of vast, and so to speak of vital, importance. The danger that, above all others, a democratic nation must avoid is the disintegration of society into units with no immediate concern but self-interest, into individuals to whom social duties and bonds are gradually ceasing to appeal. Is not the same danger to be anticipated in education? There, as elsewhere, we must battle all the more vigorously against anarchy and want of organization, in proportion as the number of subjects of knowledge becomes more numerous and more complex; science and industry are advancing with such rapid strides that the human brain cannot, save by more and more rigorous discipline, adapt itself to such a variety of laws, theories, and applications. That nation which can introduce into its education the most powerful and the most consolidated organization will, *ipso facto*, enjoy in the world of intellect a superiority analogous to that of well-organized governments and armies.

Reform has, so far, been chiefly confined either to the subjects taught or to the methods employed in teaching the various literary and scientific subjects; no attempt has been made to harmonize and unify education as a whole; in fact, the systems at present obtaining in Europe do not seem to have found their true centre of gravity. Some want the basis of education to be scientific, others literary; the latter, again, may be subdivided into the partisans of ancient and of modern languages. In this volume we shall inquire if the link between science and literature is not to be found in the knowledge of man, of society, and of the great laws of the universe, *i.e.* in morals, social science, and æsthetics—in a word, in philosophy.

This idea is becoming more and more familiar; of thi the recent reforms in education in Italy are a fresh proof It has already been suggested in France that instead being relegated to the last year of school life, the course of ethics, logic, æsthetics, and general philosophy should be introduced, in their more elementary form, as early as the ages of fourteen to sixteen. This new system has just been inaugurated in Italy ; psychology, logic, ethics, and general philosophy are taught in the three highest classes of the lyceums. In France, too, a proposal has been made to include in the teaching of each of the special sciences—physics, physiology, history, etc.—the study of their philosophical principles and general conclusions. The new Italian code gives a place, principally in natural science, to general and philosophical questions. This is, then, a first attempt in the direction of a philosophical organization and co-ordination of subjects. But as the code was drawn up in an exclusively positivist spirit, certain principles, which to my mind are essential, have been unwisely sacrificed.

Of one thing, however, we may feel convinced—that a new group of sciences, *i.e.* social science, is extending its limits, and by the next century will have been awarded the first rank in importance. Too exclusively literary an education having provoked a reaction in favour of science, and scientific education in its turn having disappointed expectations, we may fairly prophesy that, in the more or less near future, the characteristic feature of education will be the moral and social tendency given from the outset to all subjects and to all methods ; this will *ipso facto* be systematization instead of the present vicious condition of affairs, which is generally known by the barbarous names of "particularizing," or "specializing." The "humanities," in the true sense of the word, which should be based upon the knowledge of man and human societies, will then be brought to the front. The humanities, with the philosophy which completes them, form the true and the only liberal education. In each of us must be "a free man," who keeps his freedom unimpaired by the ever-increasing servitude of life, able to communicate to industry itself, and to material labour of every kind, something of that "dignity" which, according to Plato and Aristotle, "comes with knowledge and thought." We must each of us feel that we are citizens; we must be animated by public spirit, always ready to place the interests of our country above those of self, above our own work and industry, above our business and our wealth. To obtain this twofold result, a liberal education was always considered a *sine quâ non*, and it was supposed that for the dominant class it should be as extended in character as possible. I shall endeavour to determine accurately the necessary bases of such an education, truly humane and at the same time national; for that purpose I shall discuss the problem not merely, as is usually the case, from the standpoint of vague and general pedagogy; I shall transfer the question to the ground of present reality, into a given environment—the modern—and a given nation—French or English, as the case may be.

A nation, like an individual, has its own instinct and genius.

It has the more or less vague sense of its "mission" to humanity.

If social science rejects every mystical interpretation of the common spirit animating a nation, it by no means rejects the reflected consciousness or spontaneous divination possessed by every nation of the functions which has devolved upon it. History furnishes us with ample proofs of this; the Jews were not the only people who believed, and rightly believed, that they were chosen to transform the world; the Greeks considered their mission to be the propagation of the arts and sciences; Rome claimed the dominion of the world—even when invaded by barbarians she still was queen: and finally, when deprived of her temporal power, she reduced the universe to spiritual servitude by the establishment of the Papacy. The English claim that their destiny is to rule the sea, and to found colonies in distant lands. Americans are fond of representing their country as a theatre for the trial and development of liberty in every *form* and in every direction of speculative and practical life;

scarcely an American can be found who has not in his mind, in a more or less nebulous form, this idea of illimitable individualism and indefinite expansion. We know the Germany of to-day believes in her scientific and political mission, just as in the time of Luther she believed in her religious mission. As for France, her belief in the universal triumph of reason, law, and fraternity is a commonplace. France prides herself on being, *par excellence*, the focus of those ideas and sentiments which in the true sense of the word are *humane;* she is the country of "humanity," in the broad sense in which the fifteenth century understood the word. Her classical literature and art form a literature and an art of an entirely human and universal expansion; she is pre-eminently the classic land, the land of the "humanities." The first duty of every French government is to maintain, in the education it provides for the nation, the literary and artistic honour of France, and her faith in a profoundly human morality and philosophy.

Above all, a great nation like France must foster the production and selection of the highest genius, or even of simple superiority. How, then, is genius born and developed? By the combination of three factors: (1) The hereditary transmission of the qualities of the race, and in particular of the family; (2) The "happy accidents" and peculiar circumstances of spermatic or embryonic life; (3) The influence of the national environment and of national education. We have no control over the embryo or over those chances which by a precious *idiosyncrasy* virtually create a genius; but we can do something, we can even do a great deal, to prepare for the advent of minds of a higher order, by the accumulation of certain qualities in the race, and by the maintenance of that intellectual and æsthetic environment which is, as it were, the vital air of genius.

An evolutionist has justly remarked, *à propos* of adaptation to environment, that in Greece, where every god had his own temple, every temple its statue, every house its altar, and every altar its minor divinities; in Greece, "where marble was as common as brick in London," and where sculptors were as numerous as carpenters, we can understand how a Phidias was born and found admirers, while, on the other hand, he could not have been born in Germania. So in Italy, where from the earliest times nymphs and satyrs have been portrayed, succeeded in later days by Madonnas and St. Sebastians; where little chapels have always been hung with votive offerings to Venus Genetrix or to Our Lady of the Sea; where countless generations of artists decorated the walls of Pompeii, or covered with rapid frescoes the commonest ceilings of Florence and Genoa; need we wonder that a country, where a lofty level of taste and artistic finish was thus developed, should have produced a Leonardo da Vinci and a Raphael?* On the other hand, why has America produced an Edison, a Morse, a Bell, a Fulton, but no Schiller, Mozart, or Michael Angelo? The reason is easily discovered both in the hereditary and in the existing national environment. Do we wish France to remain the land of letters, painting, disinterested scientific investigation, and philosophy? We must be careful lest we reduce the classical *élite* to a few; for then the production and selection of genius or simple superiority will be impossible. We want, as I shall show, a field of culture of sufficient extent for the national mind to expand in every direction of intellectual work—of literature, art, and science. France must be literary, scientific, and artistic, if Frenchmen are to be literary, scientific, and artistic; if they are to maintain their influence and glory as a nation. If France chooses to become "Americanized," she will perhaps cease to be France, but she will certainly never become an America.

The classics are already the pledge of a certain disinterestedness, of a certain literary taste; even Latin, "apparently useless," is useful in turning the minds of the young from their immediate or future interests—personal interests—in carrying them back to great national and historical interests, to French literature and to the ancient literature by which it was inspired, to that ancient art from which our modern art still derives its inspiration. That is *Gallia Perennis*, beginning with Rome or earlier still, instead of "commencing with the French Revolution."*

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* *Vide* Grant Allen, "Idiosyncrasy" (*Mind*, 1883, p. 500).

Democracy having already betrayed only too strong a tendency to utilitarianism and industrialism, the State, far from removing the obstacles in the path of all who have not gone through a full course of the "humanities," should, on the contrary, do its utmost to favour the selection and constitution of a really liberal *élite;* this is its duty and its right, especially in republics, in which, in the interest of all, this guiding influence should be in the hands of men whose minds are of the highest order, who are superior to the interests of the moment, who are least affected by purely utilitarian tendencies, and most capable of perpetuating from generation to generation that historical and permanent national spirit which constitutes the true "national will."

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* An allusion to the fanaticism which advocates that school text-books of French history should begin with the French Revolution. *Vide* Guyau's "Education and Heredity," p. 227 (*Tr.*).

BOOK I.

EDUCATION AND SELECTION FROM THE NATIONAL POINT OF VIEW.

CHAPTER I.

POWER OF EDUCATION AND OF IDEA-FORCES—SUGGESTIONS—HEREDITY.

THE power of instruction and education, denied by some and exaggerated by others, being nothing but the power of ideas and sentiments, it is impossible to be too exact in determining at the outset the extent and limits of this force. This psychological problem is the foundation of pedagogy.

I. The principle I assume at the outset is one that I have developed elsewhere,* that every idea tends to act itself out. If it is an isolated idea, or if it is not counterbalanced by a stronger force, its realization must take place. Thus the principle of the struggle for existence and of selection, taking the latter word in its broadest sense, is in my opinion as applicable to ideas as to individuals and living species; a selection takes place in the brain to the advantage of the strongest and most exclusive idea, which is thus able to control the whole organism. In particular, the child's brain is an arena of conflict for ideas and the impulses they include; in the brain a new idea is a new force which encounters the ideas already installed, and the impulses already developed therein. Hence I maintain that education as a whole is a work of intellectual selection. I have elsewhere stated the principal facts that demonstrate the impelling force of ideas. Assume a mind, as yet a blank, and suddenly introduce into it the representation of any movement, the idea of any action—such as raising the arm. This idea being isolated and unopposed, the wave of disturbance arising in the brain will take the direction of the arm, because the nerves terminating in the arm are disturbed by the representation of the arm. The arm will therefore be lifted. Before a movement begins, we must think of this; now no movement that has taken place is lost; it is necessarily communicated from the brain to the organs if unchecked by any other representation or impulse. The transmission of the idea to the limbs is inevitable as long as the idea is isolated or unopposed. This I have called the law of idea-forces,* and I think I have satisfactorily explained the curious facts in connection with the impulsive actions of the idea.† The well-known experiments of Chevreul on the "pendule explorateur," and on the divining rod, show that if we represent to ourselves a movement in a certain direction, the hand will finally execute this movement without our consciousness, and so transmit it to the instrument. Table-turning is the realization of the expected movement by means of the unconscious motion of the hands. *Thought-reading* is the interpretation of imperceptible movements, in which the thought of the subject betrays itself, even without his being conscious of it. In the process that goes on when we are fascinated or are on the point of fainting, a process more obvious in children than in adults, there is an inchoate movement which the paralysis of the will fails to check. When I was a lad,

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* "Evolutionisme des idées-forces."

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* "Evolutionisme des idées-forces," bk. iii.

† Ibid. bk. iii.

I was once running over a plank across the weir of a river, it never entering my head that I ran any risk of falling; suddenly this idea came into play like a force obliquely compounded with the straight course of thought which had up to that moment been guiding my footsteps. I felt as if an invisible arm had seized me and was dragging me down. I shrieked and stood trembling above the foaming water until assistance came. Here the mere idea of vertigo produced vertigo. A plank on the ground may be crossed without arousing any idea of falling; but if it is above a precipice, and we think of the distance below, the impulse to fall is very strong. Even when we are in perfect safety we may feel what is known as the "fascination" of a precipice.* The sight of the gulf below, becoming a fixed idea, produces a resultant inhibition on all other ideas. Temptation, which is always besetting a child because everything is new to it, is nothing but the power of an idea and its motor impulse.

The power of an idea is the greater the more prominently it is singled out from the general content of consciousness. This selection of an idea, which becomes so exclusive that the whole consciousness is absorbed in it, is called *monoïdeism*. This state is precisely that of a person who has been hypnotised.† What is called hypnotic suggestion is nothing but the artificial selection of one idea to the exclusion of all others, so that it passes into action. Natural somnambulism similarly exhibits the force of ideas; whatever idea is conceived by the somnambulist, he carries into action. The kind of dream in which children often live is not without analogy to somnambulism. The *fixed idea* is another instance of the same phenomenon, which is produced in the waking state, and which, when exaggerated, becomes monomania, a kind of morbid monoïdeism; children, having very few ideas, would very soon acquire fixed ideas, if it were not for the mobility of attention which the ceaseless variation of the surrounding world produces in them. Thus all the facts grouped nowadays under the name of auto-suggestion may, in my opinion, be explained. Here we shall generalize the law in this form: every idea conceived by the mind is an auto-suggestion, the selective effect of which is only counterbalanced by other ideas producing a different auto-suggestion. This is especially noticeable in the young, who so rapidly carry into action what is passing through their minds.

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* Bain, "Mental Science," p. 91 (*Tr.*).

† "Evolutionisme des idées-forces," bk. iv. *Vide* Guyau, "Education and Heredity" (Walter Scott), pp. 14, 23 (*Tr.*).

The force of example, which plays so important a part in education, is likewise reducible to the communicative and selective force of every representation. In fact, we explain in the same way the second form of suggestion, that in which an act is suggested not to one's self, but to others by means of an idea. Perhaps the most interesting part of Guyau's researches is his exhaustive treatment of suggestion and its *rôle* in education.* Guyau was, I believe, the first to point out the close analogy between suggestion and instinct, with the possible application of suggestion to moral therapeutics, "as a corrective of abnormal instincts, or as a stimulant of normal instincts which are too weak." "Every suggestion is a nascent instinct wholly created by the hypnotiser."† Since these words were written, the therapeutic results of suggestion have been numerous and important. By suggestion, Doctors Voisin and Liégeois have cured melancholia, dipsomania, morphinism, drunkenness, and excessive indulgence in tobacco. M. Delboeuf asserts that he has made a timid girl brave. M. Voisin transformed the character of a woman who was idle and dishonest; he also claims to have changed a married woman, who had made domestic life unbearable to her husband, into a gentle and affectionate wife. This would have been a boon to Socrates, for instance. Finally, M. Liébault, of

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* *Vide* "Education and Heredity," pp. 23, *et seq.* (*Tr.*).

† Ibid. p. 5 (*Tr.*)

Nancy, cured a lad of incorrigible idleness for six months.* It is needless to say that Guyau does not advise, and even expressly condemns, any introduction of hypnotism into normal education ; it is far better, as he says, "to leave the boy in idleness than to make him a neuropath." His object in quoting pathological facts is merely for the purpose of deduction as to the normal state. In Guyau's opinion, hypnotic suggestion is nothing but the morbid exaggeration and artificial intensification of suggestive phenomena produced in a state of perfect health.

Normal suggestion, which is the only suggestion that should be used in education, is psychological, moral, and social ; it consists in the transmission from one individual to another of ideas or impelling sentiments, and in the possibility of rendering these ideas or sentiments permanent. We are not, in the normal state, controlled by a particular magnetiser, but it by no means follows that we are not "accessible to a multitude of small suggestions, at one time at variance, at another accumulating and producing a very sensible mean effect." Children, in particular, are open to every suggestion of the environment. Guyau shows that, from the moment it enters into the world, the child's condition may be compared to that of a hypnotized subject. There is the same absence of any ideas of its own, or the same dominance of a single idea. "Everything that the child sees or feels will be a suggestion ; this suggestion will give rise to a habit the effect of which will sometimes persist throughout the whole of life, just as impressions of terror excited in children by nurses may persist." If the introduction of new sentiments is possible by wholly physiological means, it should be equally possible by moral psychological means. Hence the importance of the fact that "recent studies in the nervous system seem likely to correct scientific prejudices against the power of education as science becomes more perfect." Suggestion, which creates artificial instincts capable of counterpoising hereditary instincts, constitutes a new power comparable to heredity; now education, as Guyau says, "is a totality of co-ordinated and reasoned suggestions, and we can therefore understand the importance and efficacy it may acquire from the physiological and psychological point of view." *

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* "Education and Heredity," pp. 9, 10 (*Tr.*).

In my opinion, suggestion is only a particular case of the most fundamental law of idea-forces, the law which dominates all pedagogic science, and to which the author of "Education and Heredity" has made in several chapters of that work a very important contribution.

Ideas are sometimes considered of little consequence, and are supposed to have scarcely any influence upon the conduct. On the other hand, the philosophers of the seventeenth century, with Descartes and Pascal, considered sentiments and passions as indistinct thoughts, as "thoughts, as it were, in process of precipitation." This is true. Beneath all our sentiments lies a totality of imperfectly analyzed ideas, a swelling stream of crowded and indistinct reasons by the momentum of which we are carried away and swept along. Inversely, sentiments underlie all our ideas; they smoulder in the dying embers of abstractions. Even language has a power because it arouses all the sentiments which it condenses in a formula; the mere names "honour" and "duty" arouse infinite echoes in the consciousness. At the name of "honour" alone, a legion of images is on the point of surging up; vaguely, as with eyes open in the dark, we see all the possible witnesses of our acts, from father and mother to friends and fellow-countrymen; further, if our imagination is vivid enough, we can see those great ancestors who did not hesitate under similar circumstances. "We must; forward!" We feel that we are enrolled in an army of gallant men; the whole race, in its most heroic representatives, is urging us on. There is a social and even an historical element beneath moral ideas.

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* *Vide* "Education and Heredity," p. xxiv.

Besides, language, a social product, is also a social force. The pious mind goes further still; duty is personified as a being—the living Good whose voice we hear.

Some speak of lifeless formulas; of these there are very few. A word, an idea, is a formula of possible action and of sentiments ready to pass into acts; they are "verbs." Now, every sentiment, every impulse which becomes formulated with, as it were, a *fiat*, acquires by this alone a new and quasi-creative force; it is not merely rendered visible by its own light to itself, but it is defined, specified, and selected from the rest, and *ipso facto* directed in its course. That is why formulas relative to action are so powerful for good or evil; a child feels a vague temptation, a tendency for which it cannot account. Pronounce in its hearing the formula, change the blind impulse into the luminous idea, and this will be a new suggestion which may, perhaps, cause it to fall in the direction to which it was already inclined.* On the other hand, some formulas of generous sentiments will carry away a vast audience immediately they are uttered. The genius is often the man who translates the aspirations of his age into ideas; at the sound of his voice a whole nation is moved. Great moral, religious, and social revolutions ensue when the sentiments, long restrained and scarcely conscious of their own existence, become formulated into ideas and words; the way is then opened, the means and the goal are visible alike, selection takes place, all the volitions are simultaneously guided in the same direction, like a torrent which has found the weakest point in the dam.

Conduct, therefore, depends in a great measure on the circle of ideas formed by each individual under the influence of experience, social relations, or of his intellectual and æsthetic culture. Every man eventually possesses a totality of general notions and *maxims* which become the source of his resolutions and actions, because the whole is blended into a sentiment and into a habit. Even in children the tendency to *maximation* is manifest, because a maxim is a generalization which satisfies the thought.* If, then, there is a break in the circle of ideas at any important point, if into that circle false notions or immoral maxims have gained entrance, we shall become feeble and vicious, as in the case of a nation whose fundamental laws are immoral. The various mental faculties of an individual are developed, like his physical faculties, in a relation of reciprocal action, but intellectual activity is more *independent* than the rest. If you have false ideas on a point of fact or reasoning, I may in a few moments put your finger on your own error or convince you by proof; but to modify a sentiment, tendency, or habit is a matter of months or years. The intellect is therefore more flexible, mobile, and progressive than the rest of our constitution; hence we can act upon it the more readily. Give a person suffering from myopia the glasses which make objects visible to him; he is compelled to admit that he sees these objects. Show an ignorant person a drop of water under the microscope, and he will be compelled to admit that the drop of water is inhabited. The intellect is to the other mental faculties what the eyes are to the organs of our body—touch at a distance. It follows that intellectual activity has superior power in the direction and transformation of other kinds of activity. As it discloses new aspects of things it produces thereby a double effect—it excites new sentiments, and opens new ways to action. Every new idea tends to become a sentiment and an impulse, and therefore an idea-force. The intellect is the great instrument of voluntary selection. It is an abbreviated means of evolution, accelerating and accomplishing in a few years the selections which without its aid would have taken centuries to effect.

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* Guyau gives numerous interesting examples of this. *Vide* Ibid. pp. 19, *et seq.* (*Tr.*)

Now let us pass from the individual to the social organism. There again the different activities and products of civilization are reciprocally related; but the products of the intellect and science stimulate and direct all the other social functions. Religious, moral, æsthetic, political, and economical creations are determined by the progress of humanity in the real knowledge of things or in the discovery of ideas. Instruction is a motor of primary importance in the social mechanism; but subject to one condition—that it is brought to bear upon really directive and selective ideas, on those ideas which from their intricate connection with sentiment and volition are happily termed idea-forces.

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* Guyau, "Education and Heredity," p. 109 (Tr.).

II. The exclusive partisans of heredity do not perceive that their doctrine is vitiated by a contradiction that seems to have escaped notice. They impress upon us that the fundamental law of heredity is that of regression to the average, and they do not see that for that very reason heredity tends to neutralize the effects of its own action—in so far as they are exceptional—in order to give place to agencies other than its own.

From his ingenious statistics on heredity, Galton deduces an important law which he calls "regression to the average."* Great deviations are always exceptions, and the average type very soon reappears. Take at random two large groups of persons in ten different generations, and compare their stature. The average stature of the groups will be the same, because the child inherits not only from his parents but from his ancestry. Now, says Galton, there are so many elements of every kind blended in the ancestry of a given individual, that this ancestry in its totality is indistinguishable from a sample taken at haphazard from the general population. The average stature of his ancestors will become identical with that of the population.

As the average statures of your ancestry and mine are identical, deviations in stature are due to chance and the combinations of the most intimately connected heredities;

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* "Natural Inheritance," p. 95, *et seq.* (*Tr.*).

in the great mass of the population, deviations are neutralized and differences disappear. Assuming this, let us suppose that a particular system of physical education is capable of giving a very sensible increase to the stature of individuals subjected to this *régime;* the effects of heredity upon the stature of an individual being minimized in the case of the majority at the moment of birth, it follows that it would be possible to increase the stature of successive generations by a wide distribution of this education. If the partisans of heredity object that—"The laws of nature are inevitable; given a father and mother and a grandfather and grandmother of a certain stature, the calculation of probabilities may determine in advance the probable stature of the children,"—we may answer—"Since your inevitable laws result in the triumph of the average, in the levelling of exceptions, in the reduction of the height of the tall and its increase in the short, do not you see that these laws leave the field open to the action of education?"

Take as our starting-point an exceptional individual, and ascend or descend the direct or collateral line; we shall find that those who are in immediate juxtaposition to him are still exceptional, but not so exceptional as he is; after two or three steps of this kind we shall see that these exceptional characteristics have almost vanished, and that the sum total of his near family relations is not essentially different from that of a number of ordinary persons taken at random. Further, as a matter of fact, the really exceptional individuals are the exceptional children of ordinary parents, and not the ordinary children of exceptional parents. This theory is destructive of all prejudices with regard to noble blood. People imagine that the "blood of the Howards" flows without intermixture from generation to generation, because of the constant emergence of the same characteristic qualities; but remember that we have mothers as well as fathers, and that every factor contributes almost equally to the result, and we shall see that the general characteristics of your ancestors to the tenth degree, for instance, will be very much the same as those of the ancestors of anybody else. To this there are but two exceptions or restrictions; by marriages between cousins we may prevent the ancestors from doubling in number at each degree in the scale; besides, the tendency to marry in one's own rank of society may, as far as the character depends upon rank, restrict the power of equalization. The law of regression to the average, says Galton,* "tells very heavily against the *full* hereditary transmission of any gift. Only a few out of many children would be likely to differ from mediocrity as widely as their mid-parent" (*i.e.* "an ideal person of composite sex whose stature is half-way between the stature of the father and the transmuted stature † of the mother"), "and still fewer would differ as widely as the more exceptional of the two parents. The more bountifully the parent is gifted by nature, the more rare will be his good fortune if he begets a son who is as richly endowed as himself." In spite of this, "there is nothing in these statements to invalidate the general doctrine that the children of a gifted pair are much more likely to be gifted than the children of a mediocre pair," but they will be, *on the average*, less removed from mediocrity than their mid-parent. Besides, among all the children of a small number of gifted couples, consider the most capable, and compare with the most capable of the children of *a very large number of mediocre* parents; the former will generally be inferior to the latter. Galton adds that the law of regression to the average is "even-handed," because it "levies an equal succession tax on the transmission of badness as well as goodness." If this be so, why should the educator trouble about hereditary fatalities if, on the average, hereditary exceptions are neutralized and the average hereditary type persists? It is precisely this average that education professes to affect; the whole question is therefore one of knowing if the *qualities* of the average type, which unaided heredity does not transform, and leaves persistent, cannot be transformed by other influences, and notably by education itself.

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* "Natural Inheritance," p. 106 (*Tr.*).

† Ibid. p. 87. For the meaning of *transmuted*, *vide* ibid. p. 6 (*Tr.*).

Galton finds that in a cultured environment, out of every hundred women thirty-three are artistic, and twenty-eight are artistic out of every hundred men.* Instead of being satisfied with this result as far as women are concerned, he considers the difference very small, when we consider the large share occupied by accomplishments in the education of women. And he concludes that the effect of education, compared with that of natural talent, is very small. This is a very arbitrary interpretation; the preceding statistics rather show the power of education, because the weaker sex, whose education has for centuries been inferior to that of man, is nevertheless able to show thirty-three per cent. of artistic women as compared with twenty-eight per cent. of artistic men. Besides, it is clear that natural talent is of the greatest moment in art; special aptitudes are necessary, partly due to the conformation of sensorial centres, and consequently to entirely organic causes over which education has little control. How can you make a singer out of one who cannot sing in tune, or a musician out of a man who has no ear and who cannot detect a false note, or a painter out of a man who has not a delicate sense of sight and a natural taste for form and colour?

Our problem is therefore the discovery of the qualities upon which education can exercise effectual influence. In the case of stature, this influence is, on the average, zero; stature is the result of determined physiological conditions which can only vary within very narrow limits. If a man were five yards high, he would cease to be a man; he would be a new species. To make use of the constancy of stature and the powerlessness of education to increase our height, in order to prove both the constancy of intellectual qualities and the powerlessness of education, is an unmistakable fallacy into which the fanatics of heredity are always falling. If the experience of ages teaches us that education is unable to modify stature or eye-colour (upon which Galton has brought some of his statistics to bear *), it also teaches us that it can modify intelligence and morality. The intellectual power of a man is obviously increased by instruction. Instruction will not, no doubt, create genius, but it can give to the recipient a considerable sum total of knowledge and talent. Without the aid of instruction even the born genius would remain sterile. All the arguments, therefore, of the statisticians on the constancy of stature and of eye-colour prove absolutely nothing against the possible increase of the intellectual and moral capacities.

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* "Natural Inheritance," p. 154 (Tr.).

History demonstrates the view I advance. While stature and eye-colour in the same nation remain constant, the average intelligence and morality undergo the most obvious and often the most rapid changes. Take the Scotch of two hundred years ago—a sanguinary and vindictive race, with a heavier record of homicide than even Sicily and Corsica. Now, according to the statisticians, they are the mildest and most inoffensive people in Europe, and the list of murders and assassinations is less than anywhere else. Mr. Leslie Stephen has drawn attention to the rough and unfair national verdicts based upon the characteristics of "lay figures" of John Bull, etc. Their stature, their eyes, and the colour of their hair are nevertheless unchanged.† A similar change may be noticed in the Swiss, Piedmontese, Roumelians, Cossacks, and Bulgarians. The inhabitants of the Marquesas are transformed from cannibals into peaceful and hard-working men. The Servians have become kind and gentle, while their kinsmen and neighbours, the Montenegrins, are still violent and vindictive. M. Colajanni also calls attention to the fact that one tribe of the Redskins may be addicted to theft, while another of the same blood will be

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* "Natural Inheritance," p. 138 (*Tr.*).

† *Vide* Colajanni, "La Sociologia Criminale," vol. ii.

honourable and straightforward. The Mongol is a coward in China, brave in Japan. The Jew is a business man, a banker, a money-lender in Europe; in Abyssinia he hates business, and takes to agriculture; while in the Caucasus he is a warrior! M. Tarde was perfectly right when he said that every race can be either "civilized or barbarized." Compare modern and ancient Greece, Calabria of the present day and Magna Græcia, and we descend from the highest civilization to the worst form of barbarism. In the history of Rome, M. Tarde sees open to every race, whatever its origin or colour, "a great and glorious competition," as it were, in which each in turn—Italy, Spain, Arabia, Gaul, Germany, Carthage, and Libya—won the prize of eloquence, poetry, and valour, and was seated upon the throne of the Cæsars. "By the grafting on a vast scale of Roman influence far beyond even the limits of the empire, it came about that savage humanity was nowhere unaffected." And did not the "Christianizing" of so many different races produce still more astonishing metamorphoses? Compare the German Christian with his savage predecessor, the Russian Christian with the old Russ. Where do we see, in all these instances, hereditary fatalities and the impotence of education?

Even within short periods, statistics exhibit the variations of morality and the more serious forms of crime. From year to year crime among minors is sensibly increasing; in a short time it has tripled. In England and in Spain, on the other hand, it is decreasing. The number of foundlings in the whole of France has risen from 26,000 in 1861 to 44,000 in 1885, and in Paris alone, from 2320 in 1877 to 3151 in 1883. The *Assistance Publique* at Paris places (as far as it can) most of these children with respectable peasants in the department of Nièvre. These children, "the offspring of vice and misery," should be infected from their birth with germs of the most fatal character, and M. Joly forcibly remarks that, if heredity played the predominant *rôle* attributed to it by the school of Lombroso, the conduct of these children would be deplorable. On the contrary, the peasants who have given them a home have rarely had to regret it, and in this department, "one of the freest from crime, these neo-peasants leave hardly any appreciable stain." The department of Hérault, which up to 1857 ranked among the two or three most moral departments in France, "being freest from crime," has become by degrees since 1868 more and more crime-stained, until it is now the 81st on the list. We may add, with M. Joly, that three quarters of the inhabitants of Hérault represent "individuals who have suddenly become enormously wealthy." What has heredity done against the temptations, suggestions, and examples of every kind which have sprung up in this department, and which have kindled the lust for pleasure with the lust for riches?

The short stature of the French with respect to the English has been attributed in a great measure to the devastating effect of the twenty-two years of war which followed the Revolution. Throughout that period, there was going on a continual selection of tall and strong men, and a rejection of all who were short and weak. The first mainly fell victims to death or disease, and those who returned home did not do so until they had spent the best years of their youth on the field of battle. The feeble remained at home to propagate the race. At first sight this would seem to have been a perturbing influence of great power. But according to even Galton's principles, this power is much exaggerated. On the one hand, the women were not affected by the process of selection, and therefore the perturbing influence was only one-half of what it would otherwise have been. Besides, the war only affected one generation; even if it had swept away all the men of high stature, the effect on the next generation would have been practically *nil*, for stature is determined by the total ancestry, and by fortuitous circumstances, such as are here and there the cause of a great man being born of mediocre parents. *Nevertheless, if* selection were to go on for generations, it would in the long run be effectual. In artificial selection applied to animals, it proceeds by the persistent and unrelenting destruction of every individual not corresponding to the type, or by a suspension of natural functions continued from generation to generation. Nothing less than methodic and continuous action is necessary to maintain a series of generations above what may be called the point of normal equilibrium. But education is nothing but action of this kind, a method continuously applied throughout the ages to whole generations. Society requires for all its functions a certain number of average capacities, and thus produces constant selection. The educator enlightens and moralizes masses of individuals, not merely for a single generation, but for all time. In fact, education acts on the most flexible and most malleable part of our being, on the intellect, on the sentiment, and on the will. Although it cannot add five yards to our stature, it can add circumvolutions to the brain, or carve in it lines which without its aid would not have existed. It moulds the brains of a race. If, therefore, heredity always tends to restore the average equilibrium, education can raise the point of equilibrium, it can raise the centre of oscillation, and modify the normal average towards which heredity will produce regression. If heredity is the great force of conservation, ideas are the great force of progress; the former is statical and ensures equilibrium, the latter dynamical and ensure motion. It is owing to the former that water finds its own level, but the latter raise that level, just as the stream rises above low-water mark.

To secure in the physical domain the equivalent of what takes place in the intellectual and moral domain, we must assume that the stature of the tallest and most gifted could be gradually attained by means of imitation. This would happen if a genius were to invent some way of adding an inch to his stature; his proceedings would be eagerly imitated, and generations would very soon arise with stature slightly increased. Suppose another new invention for the same purpose, and a fresh imitation by all of moderate height; we should have in a short time, owing to the fixative power of heredity, a new increase of stature in the human race. An idea, in its origin, is a novelty; it is rapidly reproduced by imitation, and thus it goes to increase the common fund. Education fixes the acquired ideas, and develops the capacity for finding new ones.

We are asked if progress, which is the raising of the average level, depends especially upon the quality of ordinary men or upon the worth of exceptional men. The second factor is obviously the most primitive and the most important; first we must have an exceptional man to conceive a new idea, and *ipso facto* introduce a new force into the totality of social forces. But the *rôle* of mediocre men is to reproduce and imitate the idea, and thereby to fix it and to give it currency, and *ipso facto* to also make it one of the factors determining the average level of the species. The ultimate result is a raising of this level. Now, education acts simultaneously upon mediocre and superior men. It raises the mediocre to the level already attained by anterior generations; it also raises higher natures to that level, and in virtue of their native and exceptional qualities enables them to surpass it.

An attempt has been made to establish differences with respect to heredity between inferior, average, and superior men, by which the inferior and superior would be subjected to a stronger, and the average to a weaker heredity. These distinctions are artificial; heredity acts in precisely the same way with each individual; only in mediocre natures its effects are not so obvious, because they re-enter the common mould. Not less artificial is the distinction between men according to their educability. M. Ribot believes that the influence of education is most marked in average natures, and leaves but slight trace upon the inferior or superior natures. This may be admitted in the case of very inferior or abnormal natures; but as far as superior natures are concerned, Guyau fairly argues that the more naturally intelligent we are, the more we are capable of learning and becoming clever by education; the more we are naturally generous, the more easily can we be educated into heroism. His conclusion is that genius is the simultaneous realization of the maximum of abundantly fruitful heredity and educability.*

To sum up—there is a *viâ media* between the prejudices for and against education. If education does not manifest all the power of which it is capable, it is because it is rarely directed towards its true end, and by the means appropriate to that end. Hence ensues a loss of living forces by the neutralization and disorder of ideas. Ideas are sown in a somewhat haphazard fashion in the mind, and they also germinate exposed to the chance of external circumstances and inward predispositions; selection is here fortuitous, as in the domain of material forces. Instruction is not enough; instruction must itself become an education, a process of self-conscious and methodical selection between the ideas that tend to issue in action. The French are always crying for instruction; others cry for culture, and they are right. The first word brings us to consider the nature of the subjects taught; the second brings us to the degree of fertility acquired by the mind. Education should not be a simple acquisition of knowledge, but a cultivation of living forces, with a view to assuring the supremacy of the highest idea-forces.

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* "Education and Heredity," p. 106.

CHAPTER II.

PHYSICAL EDUCATION FROM THE POINT OF VIEW OF EVOLUTION AND SELECTION.

AFTER psychological selection within the individual, we must consider social selection, which takes place between different individuals, or races, or nations.

Every race has two essential means of superiority, the one physiological, the other psychological. It is of supreme importance that a race should be physiologically strong, and here alone the ordinary laws of natural selection are applicable, because we are in the domain of life. There is no idealist illusion to guard against; the *mens sana* can only exist in the *corpore sano;* all mental refinements in a race are not collectively equivalent to its *health*, *vigour*, and consequently its *fertility*. Even genius can only persist and progress in a vigorous race; in fact, selection can only come into operation and produce a natural *élite*—the necessary condition of all progress—in a fertile and numerous, *i.e.* in a vigorous race. Therefore, whenever the intellect is overworked at the expense of the body, the physiological level is lowered, and thereby the intellectual level; for, sooner or later, generations physiologically enfeebled will find their cerebral power impaired. This result has been fully and clearly stated by Spencer and by Guyau.* The laws of heredity are inevitable; the legacy of impoverished organs to children means a lowering of mental capacity in the more or less near future. In the struggle and selection of races throughout history, except when young and sometimes barbarous blood has been infused into the old stock of a nation, it fell lower and lower, become sterilized, and disappeared or declined, while other races were ascending.

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* Mr. James Sully, one of the principal psychologists in England, writes as follows in a critical notice of Guyau's "Education and Heredity," in *Mind:* "Never, perhaps, has the fundamental error underlying our *present excessively narrow* and intensified intellectual culture been more

Instruction, in my opinion, may have two results—either dynamical, *i.e.* an increase of cerebral power, or purely statical, as, for instance, in the results of scientific and literary routine. In the former case it acts on heredity, and may produce hereditary transmission of cerebral power; in the latter it does not act at all, or only acts in the wrong direction, by exhausting the nervous system. It is intellectual power that is transmitted from one generation to another, and not the knowledge acquired. Hence the *criterion* I lay down to test methods of education and instruction: Is there an increase of mental, moral, and æsthetic power? then the method is good; Is the memory simply turned into a storehouse? then the method is bad, for the brain is not a storehouse to be filled, but an organ to act.

The physical and intellectual dangers of over-pressure are not unreasonably in these days occupying our attention. In our system of instruction, over-pressure really does exist in the case of hard-working pupils who wish to pass an examination. In the case of the majority, however, there is no over-pressure; they simply waste their time, "wearing out the school benches." They take good care to retain nothing but vague and indistinct notions of everything that has been made to pass through their minds; they are present, mere idle spectators, while their

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clearly demonstrated in the light of scientific principles than in this volume. To Guyau every individual is the temporary depositary of a part of the force of the race; and our modern system of education, instead of aiming at preserving this force in its most efficient forms, seems rather to be bent on consuming it.

masters make excursions through each special science; what is over-pressure to others is only intellectual vagabondage to them. If all children were overworked, the race would very soon be lost; as Guyau says, "The idle are, physically, the saviours of the race." Unfortunately, they contribute, on the other hand, to the maintenance of the race in intellectual and moral mediocrity, and they also give a wrong direction to public affairs. The advantages of their idleness, without its inconveniences, might have been secured if, instead of requiring from every one so much knowledge —most of which is useless—we had exacted only that amount of knowledge which is absolutely necessary, and a moderate *quantum* of ornamental knowledge, calculated to elevate the mind, and at the same time to interest it. If this were done, the numbers of the idle would be kept down, without falling into over-pressure and without eventually lowering the level of the race which we profess to elevate. We should not trouble ourselves about the number of things a child knows, but rather about *how* he knows them, *how* he has learned them; and especially must we inquire into the general vigour communicated to him by his lessons, for this vigour alone will be a net profit to the race. How is the soil renewed? By the sun, the air, the rain, by the free action of forces incessantly at work; undisturbed on the surface, it is in a state of constant motion and germination beneath. So with the mind. At stated periods Nature must be allowed her own way, nor must we rudely interrupt the work of unconscious and spontaneous organization, which is being accomplished within the brain; we leave the power to which we owe the grass and the trees to act without interference beneath the soil.

The Greeks knew and applied these laws. Did they not even separate gymnastics from music, *i.e.* from all the arts devoted to the muses? Euripides wrote "Iphigenia" after winning the crown at the Olympic games. In the schools of Charlemagne violent games and archery were practically *mpulsory.* M. Philippe Daryll has justly remarked that the indolence of Italy was introduced into France with the Renaissance, first into court life, and then into literary society. The peasantry alone kept all its energy, of which it gave ample proof at the end of the eighteenth century. What the Medicis began—the impoverishment of the French race—Buonaparte finished with his "twenty consecutive years of bloodshed." Add to this eighty years of imprisonment in school. The founders of the "Ligue pour l'Education physique" were therefore justified in urging the State to increase the number of open spaces for exercise, of public gardens, of fields for gymnastics, and especially for games. Games, in fact, are the best gymnastics,* because they alone are at once complete and attractive; they exercise all the muscles and every part of the body; they exercise all the faculties of the intellect—rapid intuition, mental vivacity, imagination, and especially will and energy—all the fundamental qualities which make for superiority in the vital and intellectual competition of races.

The system of "muscles unexercised" and "brains under hard labour" is still more disastrous for women than for men. Woman is, *par excellence*, an instrument of natural selection, because of the qualities or defects she transmits to her children. Further, woman is the object of that second form of selection of which Darwin has exhibited the importance under the name of "sexual selection." In the animal world, by pairing couples, sexual selection results in the choice and triumph of the qualities most advantageous to the race—typical beauty, vigour, health, and fertility. In the human race, sexual selection often deviates, but in spite of this, the law favourable to the species is as a rule maintained. Observation and statistics, in fact, show us that to excite love and to decide voluntary selection, the most powerful means a woman possesses are those which spring from external advantages; then come those supplied by the moral qualities; last and weakest are those due to intellectual attractions; and even the latter depend far less upon acquired knowledge than upon natural faculties such as quickness, wit, insight.* Here a lesson in pedagogy is given by Nature herself, condemning the unnatural education at present in vogue. If indignation is expressed that man should be swayed by this hierarchy of qualities, an evolutionist like Spencer or Guyau will have no difficulty in showing that the apparent folly of lovers is really wisdom. Nature acts for the interests of the race; her supreme end is the welfare of posterity, her means—the selection of the couples best suited to that end. Now, as far as the race is concerned, "a cultivated intellect, based upon a bad physique, is of little worth, since its descendants will die out in one or two generations." "Conversely, a good physique, however poor the accompanying mental endowments, is worth preserving, because, throughout future generations, the mental endowments may be indefinitely developed."

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* *Vide Journal of Education*, March, 1891; "The Place of Gymnastics in Physical Training" (*Tr.*).

Justly does Schopenhauer see in love a *ruse* of Nature, utilizing the individual for her own ends; the woman who is capable of bearing five children is more useful to humanity than a woman who has merely taken her B.Sc. And with health, morality is most important to the race; last in order of importance come intelligence and instruction—especially scientific instruction; love, blind as it seems, is really more farsighted than our pedagogic reformers.

To sum up: in both sexes, physical equilibrium is the foundation of mental equilibrium, especially if we consider the means and the race. We must therefore develop body and mind at the same time. The evolution of brain and of the faculties takes place under conditions which must not be transgressed; otherwise generation transmits to generation an unstable organism. This is an instance of what may be termed reversion.

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* Spencer, "Education," p. 187.

CHAPTER III.

THE OBJECTS OF INTELLECTUAL AND MORAL EDUCATION FROM THE NATIONAL STANDPOINT.

WHAT are the essential objects of mental education, and what is their hierarchical order? Here, again, the doctrine of evolution and of natural selection may help us to answer this question.

From birth to manhood, the individual reproduces in himself the phases of this evolution of his species; now, which are the most stable and which are the most unstable of the characteristics acquired by the slow process of selection and eventually traditional in the species? The most stable characteristics are the oldest, and they are also the lowest, the most rudimentary, and the nearest the savage state; and they are also the most stable in the individual. To what, then, should education direct all its efforts? To whatever is at once the most elevated and the most unstable, and, *i.e.*, to the most disinterested and most general sentiments, to the most philosophical, the most moral, and the most æsthetic ideas. The rest will come of itself. Education must cultivate faculties which are the most elevated in character, and which have been most recently developed in the species by natural selection; it has no other aim than the giving to these faculties greater fixity and solidity. It must *civilize* the little savage which we call a child, and must at the same time prepare a new selection to the advantage of the best.

The really disinterested and human faculties, which should be selected from all the others, are—the love of truth for its own sake, the love of the beautiful, and the love of the universal good; these, therefore, education must take as its principal object, in order to preserve and increase in the man what distinguishes him from the animal.

Further, in these three faculties is an hierarchy, in which precedence is due to their evolution as a whole and to their pre-eminence. Priority must belong to the moral sentiment which is the most essential of the three to the individual and to society. The moral sentiment is also the first to be developed in the child by home-education, in the forms of affection and obedience. The ancients did not separate the good from the beautiful, and rightly, for they appeal more to the heart and are more within the grasp of the young than is abstract truth. The beautiful is therefore the second object of education. Moreover, as Vico says, the child can only proceed to reason through the imagination. Finally, it is important to develop, if not in the child at any rate in the youth, the love of and delight in the search for scientific truth, which is the third object of education. I cannot agree with Renan, who urges that science is superior to morality for the human race, that the discovery of a fact or of a law surpasses in social fecundity the accomplishment of duty, and that genius is above virtue. The sentiments of justice and sympathy are the very bond which maintains the different members of the social organism in unity; they are the life of the social organism. An ignorant community, practising public and private virtues, might live and even be happy. A community of *savants* without morality would be unlikely to persist and would be unhappy. Morality is no less necessary to the progress than to the preservation of society, which can only progress and prevail over its neighbours by courage, discipline, mutual cohesion, devotion to common interests, and by the spirit of abnegation and disinterestedness. Science is objective, and its objects are always present, hidden like treasure in the soil; they cannot be lost, and may always be discovered; if one lucky blow with the pick does not lead to its discovery, another may, and many men may in this case replace an individual. On the other hand, in morality, as in art, there is something purely personal, a rare and precious combination of subjective elements which cannot be met with twice; it is the *ineffabile individuum.* At the same time, a whole community of minds is condensed in a single mind, a world of sentiments is condensed in a single heart; and if this heart is not in existence to-day, it does not follow that it will be in existence to-morrow. Even in the development of the individual thought an idea is repeated; an emotion, an impression can never be recalled. Guyau, the philosopher-poet, did not always take the trouble of writing down the thoughts that struck him. "It will come back when I want it," he used to say; but if he felt an æsthetic impression, one of those indefinable emotions which are due to the moment, the environment, and one's inmost nature, he hastened to write it in prose or verse and to fix this fugitive something which is really a "mental state."

In fact, even science makes rapid progress only by the moral and æsthetic sentiments which excite to the search after truth for its own sake. And in education, science is of far less importance than the scientific spirit which, traced to its remotest source, is essentially disinterested, and produces an inevitable expansion of the ego. If the moral good, strictly so called, were ever taken from future humanity, there would still remain not only the beautiful, but also that other foretaste of the good, viz. the true. Would not a mind which has been elevated by a study of science for its own sake to general ideas and to the laws of the universe, retain a certain breadth, a certain habit of generalization, a capacity of abstracting the ego in the objective contemplation of things, *i.e.* a tendency to the impersonal and to the universal? That is the educative power of science. It accustoms us to breathe the pure mountain air, to the sight of the distant horizon; after descending to a lower level we feel confined and stifled. Can we conceive of a Newton, be discovered; if one lucky blow with t lead to its discovery, another may, and in this case replace an individual. On t morality, as in art, there is something pure and precious combination of subjective elem he met with twice; it is the *ineffabile ind* same time, a whole community of minds single mind, a world of sentiments is con heart; and if this heart is not in existen not follow that it will be in existence to- the development of the individual th repeated; an emotion, an impression can Guyau, the philosopher-poet, did not alway of writing down the thoughts that struc come back when I want it," he used to sa an æsthetic impression, one of those ind which are due to the moment, the envir inmost nature, he hastened to write it in pr fix this fugitive something which is really

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But if science takes us outside our ego, it is only by its most general and most speculative ideas, not by its particular details and practical applications. On looking at the question closer, we see that it is only the beautiful side of science that elevates and moralizes. Purely theoretical science, although apparently useless, is really that which is preeminently beautiful, or that which as yet appears to be beautiful, in spite of the profound utility it may be to the future. The brute scientific fact, so to speak, or the brute abstract law, has no educative virtue; the fact, taking a direction, must appear as the visible incarnation of the highest and most universal laws, and the law in its turn must appear as a world of truths enveloped and expressed in an infinite number of sensible facts; in a word, the sentiment of beauty springs from rich variety in unity. If at any time Science should be confined to practical applications, she will no longer discover either new truths or new utilities. In science the useful springs from the beautiful; beautiful theorems are found to be the most useful, but their discovery was due to their beauty and not to their utility. Every important truth was first a truth sought and admired for its beauty, and found by that instinct for the beautiful, which in scientific speculation is confounded with the instinct for the true. At first Kepler only saw in the laws of the planetary orbits their sublimity; similarly, Newton asserted the doctrine of universal gravitation because he saw in it a universal harmony, a reduction of variety to unity, an infinite fertility in simplicity itself.

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* Guyau, "L'Irréligion de l'avenir."

> "Rien n'est beau que le vrai, dit un vers respecté,
> Et moi je lui réponds, sans crainte d'un blasphème :
> Rien n'est vrai que le beau, rien n'est vrai sans beauté." *

Further, Science needs for progress a certain idealism which transports her from the world of narrow realities to the vast field of the possible. Even to the geometer, the ordinary figures presented to us by reality are only particular cases of infinite possible combinations. Nowadays the quantities we call real are no longer considered as anything but particular cases of the quantities we call imaginary. What is called real is quite a secondary matter to a Descartes, or a Pascal, or a Leibnitz; they see beyond all realities, and live in a kind of "perpetual dream of the possible," † and see in physical phenomena but echoes of higher harmonies. Faraday compares his intuitions of scientific truth to "inward illuminations," ecstasies, as it were, raising him above himself. One day, after long reflection on thought and matter, he suddenly saw in a poetic vision the whole world "traversed by lines of force," the infinite trembling of which produced light and heat throughout the immensities. And this instinctive vision was the origin of his theory. Let us pass in review the great initiators of modern science and the creators of industry, the Keplers and Fultons, and we shall be struck by the idealistic and sometimes even Utopian tendency peculiar to them. They are in their own way dreamers, artists, poets, controlled by experience. Now, how can we develop this idealism, this life of imagination, this enthusiasm for the possible soaring beyond realities? By sound moral, æsthetic, and intellectual culture.

Huxley proposes to make the natural and physical sciences the basis of education. Spencer, in his turn, by a kind of

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* Alfred de Musset, "Après une Lecture" (Tr.).

† M. Laugel.

idolatry of science which is widespread in these days, makes of positive science almost exclusively the subject for youth, under the pretext that, in this life, geometry is necessary for the construction of bridges and railways, and that in every definite trade, even in poetry, we must have *knowledge*. How conclusive is poetry as an instance! Is a Virgil or a Racine made by learning rules of versification? The scientific man is not made by teaching him science, for true science, like poetry, is invention. We can learn to build a railway by rule of thumb, but those who invented railways did so only by the force of the intellectual power they had acquired, and not by the force of the mere knowledge they had received; it is therefore intellectual force that we must aim at developing. And then returns the question:—Is the best means of strengthening and developing the intellect of our youth, to load the memory with the results of modern science, or is it to teach them to reason, to imagine, to combine, to divine, to know beforehand what *ought* to be true from an innate sense of order and harmony, of the simple and the fruitful,—a sense near akin to that of the beautiful? And besides, are youths educated to be engineers or poets? Education is not an apprenticeship to a trade, it is the culture of moral and intellectual forces in the individual and in the race.

Science is only relatively a good thing, according to the use we make of it; even art has its dangers; morality alone is absolutely good. This makes instruction, especially scientific instruction, a two-edged weapon; its advantages are not without correlative disadvantages; it may effect a disproportion between the knowledge acquired and the environment in which the individual is placed, and it thus exposes the community to a kind of universal "unclassing," from which spring discontent with one's lot in life, restless ambition, jealousy, and revolt against social order. It is, therefore, necessary to choose the *objects* of instruction and to adapt them to the circumstances of each individual; we must not believe, as is too often believed in these days, that all knowledge is always profitable. Again, nothing is certain and universally good but lofty sentiments and great ideas; moral education is profitable to all and for all; instruction, especially scientific instruction, has no value except what education gives it. Acquired knowledge eventually produces good or bad effects according to the good or bad orientation of the ideas directing the conduct. In France the moral and social importance of a half-and-half grammatical and scientific instruction—left to chance, without any direction being given to it—has been considerably exaggerated. Instruction pure and simple is only a means, as yet indirect and uncertain, of moralizing and raising the nation, and this is because its end is twofold; it becomes of value for good only when the ideas that dominate it make for good. For mind and body alike, health is the only thing of constant and certain value, and morality is the health of the mind.

Further, entirely in opposition to the proposals of Huxley, Spencer, Bain, and many others, I do not give to positive science the first rank in the education of youth, because the sentiments are for us superior to the knowledge of facts or to abstract knowledge, and among the sentiments those in particular which have as their object the good and the beautiful. Too many *savants* forget that man does not live on bread or on algebra alone. Nowadays, positive science tends to suppress the traditionary morality of absolute duty and of sanction; it tends to suppress the religions by which egoistic sentiments are restrained; it tends, in fact, to suppress all social institutions which are not based upon the rights of majorities and on democratic principles. It would be idle to oppose the inevitable; but do we not see that to prevent a return to the strife between men left to vital laws alone, we must appeal to all the resources of morality and æsthetics, such as the sentiment of beauty and the culture of art? Here are two children with a flower; one, educated according to the "scientific method," tells us it is a gamopetalous, hypogynous dicotyledon; family, borragineous; name, myosotis annua; the other does not know all these names, but he admires it, loves it, and carries it to his mother; you give a good mark to the former and a kiss to the latter. A poet is far more important to humanity than a botanist. If we lose a botanist, we can get another; if we lose a poet, he is never replaced. Happily, the true botanist is himself sensible of the beauty of the flower he studies; he plucks it in the forest or on the mountain, in the presence of nature, beneath the radiant heavens; he becomes a *poète malgré lui*, a poet without knowing it. Monocotyledons and dicotyledons disappear. But the fields, the glaciers, remain behind—and the flower itself, with its charm. What does the beauty of nature prove? Nothing more than the beauty of a tragedy; but there are few theorems of greater importance to humanity than the sentiment of beauty. The eye of the astronomer sees further than the heavens, and his disinterested admiration is more useful to humanity than even his discoveries.

CHAPTER IV.

THE SELECTION OF SUPERIORITIES. RATIONAL MEANS AVAILABLE.

THE education of the mind, as we have seen, has as its aim the development of moral, æsthetic, and intellectual capacities; as this development is unequal in different individuals, education issues in the manifestation and selection of natural superiorities. These superiorities are not necessarily oppressive to others, unless they are at the disposal of an egoistic and tyrannical ambition; of themselves, they are indispensable to the different and unequally elevated functions which every nation requires. On the whole, in fact, the only means available for the elevation of a nation is the existence in its midst of individuals and groups, elevated above the rest by talent, merit, and morality. Besides, the intellectual and moral *élite* is, in a measure, the hereditary depositary of great national traditions; it connects the present with the past, and its duty is therefore to connect the past with the future. Hence the spirit of conservation and the spirit of progress equally call for the free selection of capacities, and their free access to the functions they are best fitted to perform. An imperfectly developed democracy may be instinctively and naturally hostile to everything that seems an *élite*; it believes that equality, which is necessary and just in the domain of rights, is in all cases the only law; it does not know (never having been taught) that the whole of nature progresses by the development of superiorities, by the onward march of the best—the best not only, as in the animal world, from the point of view of force, but also from the point of view of intellect, and especially from the point of view of morality. The first act of the collective life of an organism is to give the rest of the body a brain, which the rest of the body follows for its own conservation and progress. The individuals forming the national body, although equal in rights, are no more equal in function and in importance than the cellules that compose the human body. We must not, therefore, wish to reduce everything to a dead level under the pretence of equalizing. The paradox of pseudo-equality is equivalent to the statement :—"the human body is nothing but cellules, and all cellules are equal because in each we find nothing but carbon, hydrogen, oxygen, and nitrogen." However, as M. Laffitte replies, let Shylock take his ounce of flesh off my arm or leg, and I remain myself ; but let him take it from the heart or from my brains, and my life is over.* It is the duty of the dominant class and the government to look high and to look ahead, to prevent this blind levelling down, to react against the natural downward tendency of the masses. A real democracy, far from excluding natural superiorities, on the contrary, favours them.

In olden times the institution of a nobility was an attempt at a process of natural selection. M. Ribot has given excellent reasons why it might be illusory to count nowadays on either this form of selection, or, as Renan proposes, on imitating it for the advantage of *savants*, academies, etc. The nobility formed an *élite* only in a very restricted sense, that of the warlike virtues. If the absolute superiority of the nobility is already a moot point, the dogma of hereditary transmission is in an equally precarious condition. Heredity, acting under quite ideal conditions, would no doubt end in continuous repetition of the same types ; but, as a matter of fact, so many other laws come into competition with it, so many accidental circumstances come into play and thwart it, that the resemblance of parent and child is only approximate Is this resemblance in a given case sufficient or insufficient? Has the law of heredity been stronger than the exception, or *vice versâ?* Experience alone can answer these questions; but "to submit the nobility to the test of experience," says M. Ribot, "to discuss its title at every birth, would mean its extinction." Besides, there is another law, with which the institution of a nobility clashes, viz. the "impoverishment of heredity." Every aristocracy, every close corporation, which has only been renewed from its own ranks, becomes gradually extinct. Water not renewed becomes foul; the ocean alone is large enough to contain within it enough waves, motion, and life to prevent it from becoming stagnant.

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* "Le Paradoxe de l'égalité," p. 38.

M. Ribot has determined the causes of this physical and mental impoverishment by showing that heredity is a force incessantly struggling against opposing forces, that it has its "struggle for existence," and that, each generation, even when victorious, issues from the struggle more weakened than before by its losses. It follows that, instead of a selection of superiorities, it, if isolated, produces in the long run a selection of inferiorities. Education alone is able, but imperfectly, to counterbalance these effects of heredity.

As an hereditary nobility is no longer possible in these days, and as, moreover, it has lost all its advantages, we must seek other processes of selection to constitute that natural aristocracy which we all agree is necessary, an aristocracy open and not closed, founded on talent and merit, and therefore what we may call a democratical aristocracy.

Nature, to carry out her selections, acts on the maximum number of individuals; this is a primary process it will be as well to imitate, but it can only be partially imitated, for nature is blind, and man is intelligent. It is impossible to give to all alike an instruction such as that dreamed of by the partisans of "integral instruction." There is an antinomy between the law of selections, of capacities, and the law of adaptation. If the field offered to selection be not wide enough, it ceases to operate; if it were too wide, it would end in the development of capacities or pretensions which no longer find their use and ultimate adaptation. The unclassed will then apply to the State itself, and accuse it of not having furnished them with employment for the real or professed capacities education has developed in them. But the acquisition of knowledge is one thing, and the culture of the moral and intellectual faculties is another. The former, if beyond due bounds, and unadapted to the environment in which the child should live, must in the long run create a number of the unclassed; but we can always, with advantage to all, supply in lavish profusion noble ideas and noble sentiments. The moral qualities—courage, justice, goodness, devotion—are equally necessary under any circumstances; and more, they constitute, with physical vigour, the main strength of the species; we must therefore develop them in each individual. The intellectual capacities—observation, reflection, judgment, method, etc.—are both useful to the individual and to the race. But it is by no means necessary for their development to apply them in the case of each individual to every object, nor to the maximum number of possible objects. The choice of objects must be regulated—but only in its sum total—by the present and future condition of the child.

The mistake into which we nowadays fall, and with our eyes open, is that of confounding the general education of the faculties with general and more or less encyclopædic instruction. It is by no means necessary, to be an intelligent man, to have learned organic chemistry, the history of Egypt, or the geography of Patagonia. I should therefore propose to lay down this rule: make moral and intellectual *education* as universal as possible, and restrict *objects of instruction* to the minimum absolutely necessary. In a word, the culture of the faculties is always good, for all *subjects;* what may be mischievous is the choice of the *objects* of knowledge. Unfortunately, our educators turn their whole attention to the objects and to the matter of instruction; a kind of pedagogic materialism makes them neglect the mind to the advantage of everything external to it.

It is of importance in education to avoid all premature classification and specialization of minds, other than that which results from the *degree* of instruction chosen by the parents for their children. There must be a primary, a secondary, and a higher education, forming a natural hierarchy; and each of these should maintain the maximum unity, generality, and elevation. For "the wind bloweth where it listeth;" we can never tell beforehand where it will blow, unless we are on the mountain's crest where it has more liberty and space.

The second process of selection employed by nature is the subordination of the purely individual interest to the general interest of the species. But there again nature and man proceed in different ways. Nature, in her disdain for individualities, sacrifices them to the strongest; in humanity it is impossible for the greatest number to be, according to Renan's aristocratic theory, "sacrificed" to a few privileged individuals; on the contrary, only by not sacrificing any one do the superiorities emerge in the intellectual and moral world. This is a predominant distinction between human selection and animal or vegetable selection. The more the higher order of minds is surrounded by minds already elevated and capable of understanding them, the more is this environment favourable to their development. Education must therefore be harmful to none and useful to all. Many of the reforms advocated at the present moment in France would end in raising the level of intellectual and moral education for a few selected individuals, but would lower it as a whole for the rest. Such means as these are in contradiction to the end in view. If you narrowly restrict your field of operations and of the culture of the faculties, you thereby diminish the intellectual and moral fecundity of the race. The "scientific" *élite* dreamed of by Renan, which with science as its instrument would have the right and the power to govern the world, can itself be only the product of an artificial and narrow selection; the *élite* should rise spontaneously and from our midst; its rule must be accepted.

It is true that education should not directly propose to itself, with the utilitarians (after Bentham), "the greatest interest of the greatest number," the completest possible satisfaction of the greatest number of private interests. Suppose, for instance, that a system of culture (classical culture, for example) were recognized as the most capable of raising the intellectual and moral level of the nation, without perhaps being the method of treatment best adapted to educe from mediocrities the greatest possible positive and immediately useful return to each individual; we should then have to choose between quality and quantity; we should have to ask ourselves if it be of more importance to this nation to increase its moral and intellectual greatness, by means of a sufficient number of elevated minds, or to have within it only a large number of mediocrities keeping to the *statu quo* and busying themselves each with his own individual interests. Before a great ship is launched, she must have tall masts, and therefore there must be such things as high trees; so we have to decide between that method of culture which produces the largest number of small plants all of the same size, and that which is calculated to raise pines to a towering height. But there is this difference, that in the moral and intellectual order, the high plants do not stifle the smaller, on the contrary, they help them by their shelter, by their sap, and by their strength. The educator must not consider the mere brute advantage that each individual will derive for himself, but the degree of elevation attained by all, and especially by the best, to the profit of all. To lower the level, under the pretence of equalizing those low down in the scale, is the safest way of making them descend lower still with those who might have been able to ascend. Let us, on the contrary, raise the moral and intellectual level; let us ever raise it, not of course so as to make it inaccessible, but so as to gradually elevate the best, who in their turn will raise the others.

CHAPTER V.

UTILITARIAN EDUCATION AND TRUE NATIONAL INTERESTS.

THE principles I have laid down condemn utilitarianism in education. As science only progresses by the spirit of disinterestedness, and as industry assumes scientific theory, industry itself only advances by aid of the disinterested love of the true, which is connected with the beauty of truth itself. Genius is only this love aided by exceptional faculties; it only finds because it seeks, and it only seeks because it loves. Further, the universal craving for knowledge that may be applied prevents the selection of genius; to look for useful truths before beautiful truths is to look for the fruit before the tree. And besides, how can we gauge beforehand the utility of a truth? When he shouted "Eureka!" Archimedes did not know that he had also invented balloons. A Montgolfier, limited to the application of the principle discovered by another, is not as valuable to humanity as a Euclid or an Archimedes; an Edison is not equivalent to a Leibnitz. It is not with the utilitarians that the pre-eminence will remain, for they will be barren as far as genius or even simple superiorities are concerned. A Descartes, a Leibnitz, or a Newton is neither born nor developed in a race exclusively devoted to the search for immediate utility; such men can only breathe the atmosphere in which truth and beauty shine with a dazzling light, and where they are sought for their own sake.

To the French a utilitarian education would be peculiarly harmful, because it would be in contradiction to the temperament of the race. With all our faults of mobility, thoughtlessness, our over-hasty or superficial judgment, we have a quality of the first rank which has always saved us from the gravest consequences of our faults—enthusiasm. If France is to be faithful to her genius, she must remain "the land of enthusiasm," and this sentiment, which can in time of need arouse a whole nation, is best excited by the beautiful.

Realistic and utilitarian education is the bane of political communities, and especially of democracies like France. We know that an imperfect democracy is the cult either of the individual or of the number considered as a mass of individuals. Hence every notion of a real and *continuous* fatherland, extending beyond the present collection of individuals and beyond the present majority, tends to disappear, to the advantage of individuals, whether dispersed or massed together. The will of the whole nation is therefore confused with the suffrage of the greatest number, *i.e.* with the interest of those who chance to have the upper hand at the time, and who should only consider themselves as the representatives of the whole, including the very minority whom they have defeated. The real national will is not exhausted when we speak of the sum total of individual wills at any moment. Millions of incoherent and scattered wills do not make a national will, and the present generations are only a fraction of the fatherland ; a *plébiscite* dictated by circumstances, by the passions or interests of the mass at a given moment, is not the national will, and still less is it the *ethnical* will. It is a momentary cyclone, and not a constant and continuous current like the Gulf Stream. That policy which only considers the votes of the moment, without looking far ahead, is a tempestuous policy, and if education followed the same method, if it did not work for the whole race, for real "universality" which includes the future and the present, it would tend to compromise the existence of the nation, which would only be living from hand to mouth. Public spirit would be weakened in the seeking after personal and immediate interests; numbers would stifle intellect, and the ultimate result would be universal debasement.

Again, suppose a country alone in the world or surrounded with a kind of wall of China! It still must struggle against its neighbours and obtain, not only equality with, but superiority over, them under pain of degeneration. Nations, as we know, are far from submitting to the beautiful laws of equality, of which a Rousseau or a Proudhon dreamed; now, to be superior to other nations, or even not to be simply inferior to them, a nation must perforce arouse within it every possible superiority. That is why education is not only a national but an international problem. The French felt this very keenly after their disasters in 1870—as did the Germans after Jena and in the days of Fichte. But the French have gone too far in attributing their defeats to a low level of knowledge and mere instruction; and consequently they have been carried away by utilitarian considerations. The French people, in their ignorance, cried, "We are defeated, we have been betrayed;" no less naïvely did educated men say in their turn, "We were defeated because we do not *know* geography, or history, or mathematics, or mechanics." And from highest to lowest they have overloaded the scientific side of the curriculum at the expense of classical literature. The result has been, as is now recognized, the lowering of the level of all subjects. Victories are due to much deeper causes than to the intellectual condition or to scientific knowledge; they are due to the directing ideas, to the sentiments and the will, to organization and discipline, to the *esprit de corps* animating the whole of the army and the nation. M. Hoenig, the author of a volume on "L'Importance de la discipline pour l'État, le peuple, et l'armée," tells us that the German recruits enrolled in his company had preserved but little recollection of what they learned on the benches at school. For some years he had to ascertain the amount of instruction of these recruits ; now the simplest facts of their own country were often unknown by these new additions to the regiment. "We set a number of questions on their own country, and the answers were incredible. After the war of 1870–71, many did not even know the name of the Emperor of Germany." Here, comments Grad,* we are a long way off that wonderful knowledge of geography which was so widespread among the rank and file as to enable them to find their way along any road in a foreign country. According to Marshal Von Moltke, "education is far more important than scientific instruction, because knowledge alone does not give that self-sacrifice which is wanted for the service of the country. Authority above, obedience below, discipline is the whole soul of the army. An undisciplined army is an institution always costly, unreliable in war, full of danger in peace. It is this discipline that fitted our armies to win three campaigns." And by discipline the Germans mean all the military virtues, the qualities of the will and heart, and not merely those of the intellect. At the beginning of the century, on the eve of the catastrophe that nearly proved the ruin of Prussia, Schaarnhorst, the future reorganizer of the German army, wrote to his king, "We have begun to think more of the *science* of war than of military virtues ; but this has ever been the ruin of nations." And military virtues become more and more necessary as armies increase in size ; individual heroism loses its importance and general discipline becomes essential. Great armies, in fact, find cohesion, rapidity, and security necessary to their existence. In case of a normal mobilization, Germany would gather beneath her standards three million armed men, and with the reserves six millions ; the war footing of Russia is 2,900,000 ; of France, 1,900,000. If the present German army were set in motion on a single road, with all its reserves and trains complete, it would reach from one end of the empire to the other. With such masses of men, moral and material discipline alone can maintain unity and promptitude of movement, as well as safety of supplies. Certainly the schoolmaster contributes to the final success, if he himself has taught and clearly formulated discipline, self-sacrifice, and devotion to duty—for these are at the same time ideas and sentiments. The principal conditions of victory for a modern army are, therefore, the development of solidarity, respect for the hierarchy, in a word, everything that *organizes* and unifies; geography and history, physics and chemistry, go for next to nothing, and that is why a Von Moltke places moral education far above purely intellectual and scientific instruction.

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* "Le Peuple Allemand."

What is true of an army is true of a whole nation; every people divided, disorganized, and individualized to excess, becomes mere human dust; a whirlwind sweeps it away. The Emperor Frederick III., at the beginning of his reign, wrote to Bismarck: "I consider that the problem of the care to be given to the education of youth is intimately connected with social questions. A *higher* education should be made accessible to more and more extended *strata*, but we must avoid a *semi-instruction* which will create grave danger, and give rise to pretensions which the economic forces of the nation will be unable to satisfy. We must equally avoid neglecting our educative mission by exclusively attempting to increase instruction."

The pedagogic problem, in fact, is eventually confused, not only with questions of internal and external policy, but also with the social question. The Germans realize this more readily than any other people, because, with them, the danger is more pressing. The increase of nations and races is to modern communities an element of internal force and external expansion, but it also threatens them with far-reaching disturbance. In Germany the socialist vote has increased from 311,000 in 1881, to 800,000 in 1887, and to a million and a half in 1890. "When Germany," said one of the socialist leaders in the Reichstag, "has a population of sixty millions, the *government* will pass into the hands *of the working classes by the mere effect of universal suffrage.* Now, while the population of France remains stationary and is comparatively decreasing, the Germans have a yearly increase of half a million; *i.e.* the population of Germany by the end of the twentieth century will be 170 millions. By the end of the next century the government and the disposal of the military power of Germany may be in the hands of this ever-increasing socialism; we see that invasion might threaten the French race from without at the very time she is threatened with disruption within. It has been rightly said that the policy "of blood and iron" now advocated between nations by Germany may some day be quite as legitimately invoked between classes.

To sum up—education has to take into account a twofold group of forces, those of conservation and those of progress. The former are at first maintained in the race by natural heredity, the latter by tradition of every possible kind, *i.e.* a sort of self-imitation by society throughout all time. The latter are chiefly developed by the initiative, invention, and search after novelty of minds constituting a governing *élite* and an aristocratical democracy. Education, by natural and not by artificial means, must assure the selection of capacities with a view to progress, with no less care than she must pay to securing the persistence of the conservative tradition which is the basis of society itself. It must therefore, in the true sense of the word, *elevate* every mind, it must only bestow attention upon what is moralizing, what is disinterested, and upon that which looks far ahead. It must renounce the superstition of knowledge which is only knowledge, of truth which is only truth, of fact which is only fact. A nation pre-eminently needs what is known as "public spirit," *i.e.* a spirit of devotion to the common weal; it needs all the social and also all the intellectual virtues, which as we have seen consist in the disinterested love of the true and the beautiful. Utilitarian and positive education, or what goes by that name, is therefore more fatal than any other system to the fertility and force of the nation. It is just now making some progress in Germany by the development of the Realschulen, which is causing no little anxiety to enlightened minds, and no doubt is preparing some checks for the Germans in the future; let us maintain in our midst, so as to preserve and increase all our chances of success, a really liberal education, the only education that has ever been at the root of a nation's power. If individuals, if parents themselves, are always tempted to forget the general and national aim of education, the State ought to keep it constantly in view. France cannot, in the instruction of her children, consider the immediate and individual interest of the child, as the children themselves and the parents do; she must work for the future of the nationality and of the race, for those future generations which represent an infinitely greater number of men than the present generation, and who are certainly the better part of our fatherland. The greater part of the knowledge that will be useful to the individual in his future profession, he will acquire by degrees as he wants it, but education has to make men and citizens incarnations of humanity itself. A liberal education can only deal with the necessary and the beautiful; in most cases there is too much of "the useful" in it. Everything that is only useful is only relatively so, and therefore, relatively useless. The beautiful, the good, and speculative truth are alike universally and eternally useful.

BOOK II.

SCIENTIFIC HUMANITIES FROM THE NATIONAL STANDPOINT.

CHAPTER I.

THE HUMANITIES AND THEIR GENERAL OBJECT.

THE object of the humanities, as the name implies, is to awaken in the mind of the child ideas and sentiments which are really human, and which, if we may say so, connect the mind of youth with that of the whole of humanity. In other words, we must implant the best part of human evolution in the mind of the individual. For that purpose we must develop in the *subject* the faculties which make the man, and we must give for *objects* to those faculties the highest truths and the loftiest sentiments to which the mind of man has attained. Higher education, assuming minds already formed, treats these objects from every side, and even seeks to discover new objects. *Knowledge* is its principal end. Primary education, while aiming at the development of the faculties of the child, is reduced to occupying itself chiefly with these objects, the knowledge of which is essential to all; its object is the minimum of indispensable knowledge, just as the object of higher education is the maximum of possible knowledge. With *secondary* education it is quite different, and this is forgotten by almost all who have not studied the problem philosophically. No doubt secondary education has objects which it brings into relation with the mind, for, as M. Rabier says, "the mind is never exercised on nothing," but it is none the less true that the proper aim of secondary education is the formation, development, and evolution of the mind. We must therefore take not things, but man himself—or more generally speaking, humanity—as our object, and that is why studies of this kind deserve *par excellence* the name of humanities. It also follows that the first rank in the humanities must be given, not to material, but to moral and social subjects. As M. Lachelier neatly puts it, "the real object of these studies is the nature and the moral life of man." Hence their character of lofty disinterestedness, which has won for them the name of liberal studies. Primary education cannot be severed from a certain utilitarianism, because its object is the *necessary*, what is essentially useful; secondary education has mainly in view the *good* and the *beautiful*; higher education is chiefly occupied with the *true*, either with what is already known, or with the discovery of new truths. These objects of instruction in secondary education are therefore not a matter of complete indifference; we must choose by preference those the knowledge of which is best adapted to secure the evolution of the individual and of the nation to which he belongs. Instruction is here a means, education an end. In fact, literature being the freest and broadest expression of the human mind, it has been hitherto taken as the foundation of the humanities, just as philosophy is their crown.

Such are the principles that have inspired education in France from the days of Montaigne, Bossuet, and Fénelon, to Rollin and the great names of the French University. Other nations have but followed in our wake. Germany absorbed and still retains the spirit of our great schools and universities. In Germany the distinction between students in letters and science is unknown. Those who intend to be doctors and engineers receive the same classical culture as those who are to be teachers or lawyers. The same *Abiturientenexamen*, corresponding to the English matriculation or the French B. ès. L., admits them to the universities, and comprises: (1) a German essay; (2) a Latin essay; (3) Latin prose; (4) Greek prose; (5) French prose (no dictionaries allowed);* (6) mathematics. The latter is all the science required! In the *vivâ voce* they are examined in Latin and Greek authors, in Greek and Roman, or German history. Geography is associated with history, *but is not made the object of special study.* Here we see to what is reduced the important part attributed by legend to geography among the Germans. Finally, they are questioned on arithmetic, geometry, and elementary algebra. No questions are asked in physics or natural history. In other words, all that is required is a sound knowledge of Latin, Greek, and mathematics. If students want to study science, they may do so to their hearts' content at the universities. There they will remain for four years, being on the average about nineteen when they take their *abiturientenexamen*, *i.e.* they will study until they are about twenty-three. This system shows that we can have scientific men without overloading them with science at school; and that a good classic may afterwards build solid bridges or superintend the working of mines.

In the gymnasiums there are not even special teachers for science.† At the State examination each candidate who proposes to adopt teaching as his profession has to offer himself for examination in at least two branches; for example, classics and natural history, history and modern languages, mathematics and geography, etc. Their minds are, therefore, less wrapped up in their special work, and, therefore, less narrow. Besides, fewer teachers are necessary. The German gymnasium has nine ordinary masters and four or five assistants, forming a simple and compact staff, such as the French had about 1840, before the deplorable line of demarcation was drawn between science and letters. Since then, in addition to students in letters and science, the French have naval students, students at St. Cyr and the Polytechnique, technical students—all fascinated by the practical end at which they aim, and profoundly indifferent to everything but just what is required from them. This parcelling out of studies into specialities, besides involving an inevitable lowering of general studies, is extremely mischievous in its influence on the special subjects which it is fondly imagined are thereby fostered.

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* A Latin-German Dictionary is now allowed (*Tr.*).

† This is gradually ceasing to be the case (*Tr.*).

While remaining faithful to the traditions of classical education, Germany has wished to avoid the excesses into which, in some of our schools, the culture of the faculties for their own sake had fallen ; I mean that purely *formal* culture held in honour by the Jesuits, which exercised but did not nourish the mind, as if the mind as well as the body did not need the nourishment that stores up the living power and the exercises by which that power is made available. But Germany, avoiding one pitfall, has fallen into another. In education she has given the first rank in moral and social science to historical and philological science ; *i.e.* she has fallen into erudition. Now, to learn facts, dates, and words is an arresting of what may be called the material of human evolution, instead of a penetrating into the real spirit of the humanities. Disconnected from moral, social, and philosophical considerations, history, geography, and linguistics are still material sciences, just as physics or geology. And they have an additional inferiority in being not only much less scientific, but much less useful.

In England, the school of evolution, originating in the school of utilitarians, and finding, moreover, in the nation itself, traditions of utilitarianism, has allowed itself to be led astray by the mirage of the natural sciences, and has aimed at making those sciences the bases of instruction. In the science of education it had thus opposed naturalism to what may be called "humanism." Spencer opens his volume on education by the statement that in all things the end in view is *knowledge*, a principle the falsity of which we have seen. Thus, throughout the book, Spencer is wavering between the ideal of primary and the ideal of higher education, without even a suspicion of what secondary instruction is. This idolizing of science is all the more surprising because, in his "Sociology," Spencer insists on the powerlessness of instruction to modify individuals and nations, on the inefficacy of elementary knowledge, on the omnipotence of heredity, and on the superiority of sentiments to abstract ideas. Spencer's pedagogy is thus at variance with his own views, and is eagerly pursuing an end of which it has exhibited the inadequacy. Further, he confuses the inward evolution of man with those outward objects the knowledge of which may modify but cannot cause it; man is absorbed in nature, and the "humanities" are eliminated from such a system.

CHAPTER II.

FAULTS IN OUR TEACHING OF SCIENCE.

"THE natural sciences," it has been said, "are chiefly valuable from the humanities they contain." The properly organized study of science has recently and justly been called "the scientific humanities." I propose to show what is meant by this organization. In my opinion the aim of the real scientific humanities should be the transformation of the material sciences into moral science, by teaching their spirit, methods, principles, and conclusions, and, finally, their history and social consequences. We shall afterwards take up the question of the classic humanities, which, in my opinion, should be reformed in the same direction.

Spencer can no longer in these days compare science to Cinderella, and literature to her haughty and frivolous sisters; it seems clear that science nowadays is proud, and not literature. The French University has allowed itself to be invaded by the different sciences, and has given to each of them an important part in the *programme* of 1885. It is now unanimously recognized that this scientific instruction, far from raising the level of studies, has only lowered it. In spite of that, positive science is still so tyrannical in its influence on our educational system—thanks to its being a *sine quâ non* in the competition for admission into the State schools—that it is important to ascertain its real value in education.

Science gives us a model of what truth is; it accustoms us to weigh evidence; it gives us method—which has been called the virtue of the intellect. But if it presents advantages, it also, when isolated, presents grave disadvantages which are forgotten by those who wish to make it the foundation of education.

To justify the increasing importance attached to it, elementary instruction in science must avoid three pitfalls—it must neither be too material, too utilitarian, nor too special. You say you accustom the child to observe. To observe what? Material objects, that it turns round and round, takes to pieces, or breaks, if necessary, to discover their properties and structure; it may be a stalk of hemp or flax, it may be corn or a flower, a piece of chalk or quartz, the pen he is using, a brush—any of the usual objects around him. Thus the child is accustomed to believe nothing *but what he sees*. This development of the positive spirit is useful in the domain of natural science, but it is not without danger in other fields, and needs a corrective. You also tell the child that each word should by its scientific definition express a thing absolutely accurate, representable, and, in ultimate analysis, sensible; an excellent habit in geometry and physics, in which we have to do with material things; but material precision does not also give us clearness of moral vision; when you speak to him of *honour*, *duty*, or his native country, what can they materially represent to his imagination? What objects observable by the senses will be attached to these sublime names? Realities in the moral order; but these realities are ignored by scientific instruction.

The present study of science, with its infinity of detail and application, and unaccompanied by general and philosophical views, has a second fault—its too utilitarian tendency. No lofty aim is presented to the child's mind; he can only say, "I learn arithmetic because some day it will be useful to me to know how to count; I learn physics because it will be useful to me to know the properties of bodies; I learn mechanics because the subject is useful in making machines; I learn natural history because it is useful in hygiene and in medicine; I learn geography because it is useful to know about different countries, and because it is said to be useful in time of war, etc. The child thus runs the risk of taking self-interest as the universal standard, and the more our curricula are overloaded with unconnected special sciences, the less educated virtue they have.

Let us go a step further. Supposing that the study of science—*i.e.* of science as at present conceived—gives depth to the mind, they continue in reality to restrict instruction to *formal* science. What are mathematics? Purely formal science. Arithmetic and algebra are the rhetoric of numbers. Given any abstract data you like, upon those data we then reason and reason, and from those data we draw deduction after deduction. General principles are applied to particular problems, and the solution of these problems becomes a petty mechanical talent, like the syllogistic talent of the Middle Ages, or like Raymond-Lulle's reasoning-machine. The very science of motion, mechanics, the queen of the ages, is still based upon formal relations in space and time; it is always making its deductions and reasoning as far as it can on an hypothesis which is the equivalent in science of the subject of a Latin speech in literature. It is true that in the one case we must reason accurately, and that in the other it is not necessary to do so; but even then, when the cause we have to sustain is a bad one, it is good to talk nonsense. But the mathematician will never in real life reason better than others, because he is accustomed to abstract reasoning, to deducing the rectilinear consequences of an hypothesis, and is not accustomed to observing and connecting all the data of experience, nor to the induction, the guessing, and the appraising of probabilities. In private and public life, the mathematical spirit is the art of seeing only one side of the question. In mathematical science we make our own depositions; in the world of reality experience furnishes us with definitions, and is ever transforming and correcting them by fresh determinations. We always find in results more than we had found in our definitions and principles. We had said, "Two and two make four;" but we find five, and our narrow formulas are invaded by nature and life.

Mathematics develop that kind of reasoning by signs, so happily termed by Leibnitz symbolic reasoning; they replace objects by more or less conventional substitutes. It follows that they may give the habit of thinking by formulas, without taking into account the things themselves, the habit of retailing the results of reasoning without having gone through the process of reasoning. Leibnitz called this "psittacism." Algebraists look down on grammarians; but they should not forget that if the latter have mainly to do with words, they themselves are taken up with signs, which are still further removed from intuitive reality. The mind is only exercised on *quantities*, not on *qualities*, and we may be able to solve problems in the differential calculus without being thereby any the wiser in our moral and social life. We do not learn to draw the delicate lines of the human face by drawing straight lines, triangles, or squares; what is wanted is the power of taking things in at a glance, and the artistic instinct. Similarly, the solution of scientific problems is not of the same order as that of a moral or literary problem.

But the physical sciences? some one will say. They lift us into the world of form; they give to the youthful mind the depth it lacks; they accustom the young to observe, to experiment, and to draw inferences. This is an optical illusion, as more than one philosopher has pointed out, from Herbart to Guyau. It is supposed that the teaching of science *ex professo*, as in classes at school, develops the same mental qualities that were necessary to great scientists in the construction and advancement of science; but instruction even in natural and physical science chiefly develops the memory, and not the inductive reasoning, and the spirit of speculation and hypothesis, which are the indispensable requisites for any discovery. Think how

Pascal groped in the dark, recall the series of experiments and assumptions he had to make before he could prove that air had weight,—a series which began with Galileo and Torricelli. Is the natural science master of to-day making inductions, or observations, or hypotheses? Nothing of the kind; he does not make his pupils go through the inductive chain anew. He begins at the other end; he lays down dogmatically the theory of the weight of the air, deduces the principal consequences, and finally gives the boys new deductions to draw, in the form of problems. There is no mental process going on in the boys analogous to that which was going on in Torricelli, Galileo, or Pascal. They are told—It has been proved that air has weight; it has been proved that the earth revolves. Still, extraordinarily enough, they do teach them a little history apropos of these two important discoveries. That alone is worth all the theory taught, because it is a good example of the intellectual virtues without which discoveries cannot be made. The teaching of science *ex cathedrâ* and science itself are so different as to be almost antithetic, just as the active is the opposite of the passive, and invention the opposite of memory.

Now let us see at work this intellectual gymnastics to which young people, according to Spencer, Bain, Huxley, and their disciples in France, are subjected by the teaching of positive science. The chemistry-master enters the class-room; the subject of his lesson is chemical affinity. The boys take their pens and wait. "To explain the union of different simple bodies in the same composite molecule, we must admit the existence of a force which first of all attracts them one to the other, and then maintains the union thus effected. This force is called *affinity*." * The boy, knowing nothing about this *force* which maintains the union of bodies, writes as rapidly as possible a simple "definition of words," which he is told to learn by heart. "We are going to examine the characteristics of affinity, and the principal causes that modify it." Boy writes: "*Characters, modifying causes.*" Meanwhile, the master proceeds: "(1) Before affinity can be exercised between two bodies there must be contact. A very simple experiment will be enough to show us this." During the experiment the pen has a moment's rest. "This is an aqueous solution of baryta, and this is a rod dipped in H_2SO_4. Sulphuric acid and baryta have a strong tendency to combine and form a body known as baric sulphate." This is a new name to be engraved on the *memory*. "Now I bring the baryta as close as possible to the surface of the liquid, and you see that combination does not take place. Now I touch the solution of baryta. You see baric sulphate is produced immediately contact takes place. It takes the form of a white insoluble powder." The boys look on, and the only scientific effort, the only induction, the only experiment they have to make is the ascertaining the presence of a white powder at the end of the rod. Certainly, the experiment is an interesting and even an amusing one, but has it in the least initiated those boys into the method by which the beautiful laws of affinity were discovered, the philosophical inter-relation of forces, or their marvellous transformation one into the other? Every chemical or physical experiment, however ingenious it may be, is laid down in every detail beforehand. It develops before absolutely passive spectators just as if it were merely a description. They will never be experimenters because they have seen a series of experiments. They will have seen a vacuum created in a pneumatic machine, they will have seen a heated ball unable to pass through the ring through which it easily slipped when cold, etc. That is all very good in its way, but teaching by watching experiments is not teaching by *action*, and our boys do not act at these lessons, they watch, make notes, and summarize. All it comes to is stringing together fugitive phrases caught at random. The mind is very little developed by this, even from the *scientific* point of view.

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* A lesson taken down in shorthand at one of the great lyceums.

But the course of Natural History! There, at any rate, the boys learn to observe, get a knowledge of things, and (as it is more extended), according to M. Blanchard, a knowledge of "men." Here is another shorthand report: "After what I said in our last lesson of the *rôle* played by liquid nourishment in the animal economy and of the influence of respiration on the physiological properties of these liquids, it is evident that they should be in perpetual motion, in order that every part of the body may receive the material necessary to its nutrition. This movement constitutes what physiologists call the *circulation of the blood*." Here we find the inductive and experimental method in the act of being transformed into the deductive and dogmatic method in science-teaching. Instead of telling the boys by what prodigies of patience and intelligence the circulation of the blood was discovered, they are told—"it is *evident* that the blood must circulate, and, as a matter of fact, it does circulate." As a rule, the master limits himself to adding—"This phenomenon was unknown to the ancients; its discovery is due to Harvey, physician to Charles I., King of England (1618)." Thus summed up, this fact—far more important than any battle that ever was fought—remains a lifeless detail, and simply a little more added to the burden on the memory. "In the higher animals, the circulation takes place in the interior of a very complicated piece of apparatus, composed of—(1) A system of canals and membranous tubes," etc. Then follows a minute description, assisted by anatomical drawings, and with none of the experiments which form the foundation of physics. The pupils look on and try to fix in their memories the names of the different arteries, of the veins, and their definitions. Here, again, the boys will have exercised no intellectual faculty but that of memory, which, while their hands were mechanically travelling over the paper, was no less mechanically inscribing, in the frontal convolutions of their brains, a certain number of facts and words. After that, certain scientific men will ridicule the lad who writes Latin prose and Latin verse. There is no paradox, however, in maintaining that the study of grammar and literature is more adapted than the study of science to the development of a scientific spirit, *i.e.* the spirit of induction, research, divination, hypothesis, observation, experiment, ingenuity, and patience (the patience of a Newton). Yes, to analyze a phrase and thoroughly grasp its meaning, to translate one's own thoughts into expressions accurately conveying their meaning—especially in an ancient language—induction, observation, experiment and test, divination, hypothesis, and speculation of every kind are necessary. This exercise will make you more like the inventors of the barometer or thermometer than if you are simply present in a class in which a thermometer is being made. All the notes a science student ever made go for next to nothing in communicating the spirit of scientific and speculative invention, compared with a translation, with a piece of prose, or even with Latin verses. The spirit of insight is more necessary to the doctor, the naturalist, and the geometer than the spirit of geometry. Gladstone was reading Homer and writing Latin verses during his whole life at Eton; he was barely taught the elements of arithmetic. Reverse the circumstances, imagine him a profound arithmetician, but with no literary training. It is very doubtful if he ever would have become an incomparable financial minister. Claude Bernard began by writing plays and by ideal experiments on character before his experiments upon organisms.

There is much exaggeration also in the habit of observation that is supposed to be developed by the study of external objects. In France the elements of geology are taught to boys under twelve — "Silicious stones, rock crystal, flint, quarry-stone, sandstone, granite, the complex structure of granite, gravel, clay, limestone," etc. In the fifth (still under twelve)—"stratified and unstratified rocks, trilobites, fossil molluscs and fish, the Silurian formation, slate, Devonian formation, Pyrenean marbles, secondary formation, ammonites, belemnites, Triassic formation, rocksalt and gypsum, Jurassic formation, calcareous Oolites," etc. The best part of this programme is the excursions in the open air for which it serves as a pretext. But they do not lead to any better "observation of man," or appraising or controlling of character, because the nature of a formation has been ascertained, or a piece of quartz recognized, or a host of learned names committed to memory, or the number of petals of a flower counted, or even because botanical rambles have been made. The learning of external observation does not imply the learning of internal observation. A great naturalist may be the simplest of men and the simplest of psychologists. In fact it is almost always so. The observation of animals is closely akin to the observation of human beings, but how can children be expected to become observers of animals, quite apart from the fact that animal is far more difficult than human psychology? The study of natural history, which is the most passive of all from the purely descriptive and narrative character it assumes in our teaching, is knowledge rather than science; it is either a mere exercise of the memory, or amusement and relaxation, or a study of practical utility; on its poetic and philosophical side alone, with which our method of teaching does not, however, concern itself, has it any educative value.

The third defect which science-teaching should avoid is what is called "specialization," which restricts each special science to its own domain, without linking it with others, and without eliciting the synthetic connection of the whole. As it exists at present, our teaching of various sciences, not only many in number but each isolated from the rest, is a second tower of Babel, added to that erected by the teachers of ancient and modern languages and of ancient and modern history; each gives a course of lessons in an idiom of his own, and the result is eventually nothing but a series of specialities which is unfolded before the student. The fragmentary and disconnected knowledge which is thus given to our youth no longer possesses either scientific consistency or educative virtue. As our intellectual faculties aim at unity of principles, so our moral faculties aim at the unity of different ends in the good. If instruction is not reduced to a unity from which springs a conception of the great laws of the world and of human society, it *ipso facto* neglects the ideal ends of life, and ceases to make science useful for conduct. With their supreme truth and beauty, the different sciences also lose their morality. They run the risk of favouring the same vicious tendency which is at present evident in literature and in art. Who is not struck in these days with what is called the "subjectivism" of men of letters, poets, artists, critics, each concerned mainly with his own ego, his own impressions, his own more or less narrow personality? This is the invasion of literature, poetry, and art by egoism. Do we want this intellectual egoism to penetrate further into science itself?

The lowering of the mental level consequent on extreme division of labour extends to those who are destined to enlighten and instruct others. As John Stuart Mill says: "A man's mind is as fatally narrowed, and his feelings towards the great ends of humanity as miserably stunted, by giving all his thoughts to the classification of a few insects, or the resolution of a few equations, as to sharpening the points or putting on the heads of pins." * "Specializing" is adapted to the disaggregration of all it affects; it is the failing of too many *savants*, who, contrary to their true interests, betray a decided aversion to broad and philosophic views. The minute details with which they are perpetually occupied, the infinitely small wheels they turn in the great social mechanism, prevent them from grasping the sentiment of total unity, and the sentiment of their unity with their fellow-men; but this sentiment constitutes "public spirit." Hence their work becomes "simply a tribute to material necessity," instead of being the "happy accomplishment of a social function."

Our system of education is no more in accord with the positive than with the idealistic conception. Auguste Comte tells us that, "the first and essential condition of intellectual and moral education should consist in its rigorous *universality*." He expressly claims "an instruction capable of varied extension in a constantly identical and equal system." Now, according to Comte, the universal part of science is its spirit, its method, and its great results; these, then, are the positive bases of scientific education. He also sees in specializing a most formidable and a very rapidly increasing evil which will retard our moral and intellectual regeneration. "All the forces of society should be brought into play to combat this direction of the mind." And there is only one remedy—a broad, general, and really unified education which may serve as the common foundation of ulterior specializing. The evil exists even in Germany; the illustrious Rector of the Academy at Berlin, M. Dubois-Reymond, protests against the *industrialism* which is presented as the aim of scientific instruction. "Science, minus the philosophical spirit, narrows the mental field, and destroys the sense of the ideal." If science, on the one hand, issues in the progress of industry, it should tend, on the other hand, to the progress of the moral world. Moreover, what is positive science outside morality but a superior form of force, more dangerous perhaps than brute force, because it is more powerful, although it is, as has been said, scarcely more worthy of respect?

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* J. S. Mill, "Auguste Comte and Positivism," p. 95 (*Tr.*).

A wider extension of scientific instruction into primary education has by no means raised the moral level; the moral level has, on the contrary, been lowered. I do not say that the fault is due to the study of science, but it is certain that when science is separated from moral education, it develops in the child a certain vain presumption which ultimately tends to relegate him to the ranks of the unclassed. Besides, the tool with which it furnishes him is two-edged. We know that the criminal records of the early part of the century gave sixty-one per cent. of persons who had received no instruction. In the face of such a proportion, it was supposed that ignorance was the main cause of criminality, and the authorities set to work to extend primary instruction. "Now that it is obligatory," says Guyau, "the proportion is simply reversed; out of a hundred prisoners, seventy have received grammatical and scientific instruction, and thirty have not."* We also know that the number of crimes and offences committed by minors is increasing. It follows that the subjects of every kind with which our curricula are over-crowded are no substitute for a sound moral education. In secondary instruction, if science ultimately absorbs everything at the expense of literature and philosophy, I am persuaded that in some form or other a general demoralization must ensue.

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* Guyau, "Education and Heredity," pp. 178, 179 (*Tr.*).

CHAPTER III.

THE PHILOSOPHICAL REFORM OF SCIENTIFIC STUDIES. THEIR TRANSFORMATION INTO HUMANITIES.

REFORM of scientific studies must keep a twofold end in view: simplification, unification; and these are only possible by a philosophical organization of education.

I. With what part of the tree of science must we familiarize the child? The roots, the trunk, and the great branches; do not make them count all the leaves. In the case of the young we must reduce everything to just what is essential; the more the detailed study of science is reduced, the more will the really scientific spirit be developed—that spirit which is the antithesis to diversity of application and to mechanical memory. If a Descartes were in these days to write another "Discourse on Method," how clearly he would demonstrate the profound inutility of most of the so-called scientific studies!—their practical and pedagogic inutility, to say the least of it. What a magisterial rending of programmes would there be, of programmes which seem to have no object but to deaden and, as would have been said in the time of Descartes, to *astonish* the mind!

What is the type of a bad scientific book? The manual. Well, our so-called scientific—and let me add historical and geographical—instruction, tends nowadays to make the student into a living but mutilated and inaccurate textbook, full of blunders and confusion. That is too often the meaning of the diploma given after an examination. Teachers of science, as well as of history and geography, forget that excessive development of the memory is fatal to the other functions of the intellect. The cerebral powers, at each period of life, are limited, and we can only exact from them a certain total effort. Robert Brown knew nearly twenty-five thousand names of vegetable species; Kant, twenty thousand. When they wanted to learn new names, they forgot those they already knew. When a child's memory is overweighted in one direction it discharges its contents in another.

"To *learn* science" is an empty phrase, for, as a matter of fact, science is not learned, it is created; and Aristotle rightly asserted that in this connection knowledge is creation. *Results* alone may be the object of knowledge! but results are only a table of contents, they are neither the book itself nor the spirit that dictated it. When we wish to make young people learn too many subjects, and even these too rapidly, we are overtasking their will and intellect, and we are giving them no leisure for reflection to grasp what they have done, or to prepare for fresh conquests. We are, therefore, fashioning brains adapted to the application of cut-and-dried formulas; but we also are weakening the power of invention and decision. In a word, knowledge that is too extended and, *ipso facto* too superficial, will stifle the intellect and relax the character. Hence springs the "dearth of men" prophesied by Alexander de Humboldt half a century ago. We treat the brain as a passive piece of parchment on which is to be written in close lines the maximum quantity of geometry, physics, and natural history, etc. And this passivity tends to extend from the intellect to the character, from the individual to the race. The *savants* themselves are forced to confess with M. C. Vogt, that, by the present style of science-teaching, "individual initiative is more and more lessened, and tends to become replaced by work of an ever more and more mechanical character." We are content with grinding equations in a mill which works almost automatically ever since its invention by Leibnitz and Descartes.

If a cataclysm in its destructive course were to destroy our civilization, and if, years after, one of the programmes of the baccalauréat were discovered under the ruins, we should be stupefied by the encyclopædic science of our matriculants—

Grandiaque effossis mirabitur ossa sepulchris.

We, their contemporaries, know the real value of these giants of science. The real intellectual dynamometer is the conception and realization of ideas which have become living forces. One of the maxims of German pedagogy—and it was also a maxim in the pedagogy of the ancients—is that our knowledge is not ours until it is converted into a faculty and into an instinct.

Will any one assert that this heavy technical apparatus is necessary to artisans, engineers, doctors, officers in the army, etc.? If we look at things a little closer, we may be able to convince him that this is an illusion. Every career requires the knowledge of a good many special subjects, and of a few general subjects. The special knowledge is acquired by immediate preparation for the profession, and chiefly by practice in that profession, which puts our opponents, in the popular phrase, "in a fix." As for general scientific knowledge, it need not be so extensive; to know what is absolutely necessary, and to know it thoroughly, is all that is wanted. The founders of the École Polytechnique, says Biot, "men accustomed to general ideas, whose minds had been elevated and whose views had been widened by the Revolution, . . . knew that the science of a good engineer is composed of general notions, common to all the professions, of practical details which are proper to each. Among the former and in the first rank are higher mathematics, which give mental grasp and sagacity. Then come the principal theories in Chemistry and Physics."* If it is good for my intellectual education to learn the formulas NO, NO_2, NO_3, NO_4, NO_5, it is only as an example of the marvellous structure, the regular combinations, and the union of atoms.

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* Biot, "Histoire des Sciences," p. 59.

Practically, when I want, for the purposes of any trade, a thorough knowledge of chemical formulas, I shall only have to study them in a good text-book, and I shall have no occasion to draw upon my schoolboy reminiscences. It is considered logical to teach young people at school the science they will afterwards require in their professions; for instance, natural science and physiology to our future doctors. The contrary principle would be more logical. A medical student can only really learn anatomy and physiology in the lecture and dissecting rooms, and he will have plenty of time for that. What is the use of giving him at school a superficial acquaintance with what he will be obliged to learn all over again? It is far better to teach the young what they will in later years have no opportunity of learning, and what they will not be compelled to learn. The doctor that is to be has far more need of a sound knowledge of mathematics and physics, of literature and philosophy, than of natural history; he wants everything that will give him an upright and elevated mind; he wants a little idealism before he becomes acquainted with the miseries of human life, and the mysteries of death. Utilitarian teaching, which makes the special profession of far too much importance, defeats its own end, and far from making men more apt for their profession, it leaves them mentally imperfect and mutilated. From a *liberal* education we must exclude all over-particularizing and all over-specializing; our first aim is to make men, and men endowed with great social virtues, not to turn out ready-made engineers, mechanics, doctors, or apothecaries. *Speciality* can only come after a sure and permanent acquisition of the general subjects of knowledge, the useful must not precede the true and the beautiful.

At any rate we should be inspired by those principles in the choice of the sciences to be taught to a student taking up literature. Astronomy, for example, is less practical, less applicable to industry than chemistry, but it is also more adapted to excite admiration and to open out a wide perspective of the cosmos; it should, therefore, have a place in the programme of a liberal and mainly literary education. But, as a matter of fact, the French, after having not long since introduced cosmography into the literary curriculum, are on the point of suppressing it. In the new programmes * all the sciences but cosmography appear in single file, and a student of literature might, strictly speaking, reach the end of his studies without knowing the difference between a planet and a star, or without knowing what a nebula is.† This sudden suppression of a science by a stroke of the pen is a proof of the problematic character of the supposed "necessity" of science in education; yesterday you might have a well-informed mind although you know no astronomy; to-day you must know chemistry and geology instead. No doubt this is because it has been discovered that chemistry and geology are "more useful" for the purpose of forming "tellurians."

As for me, I should prefer that they turned out "cosmopolitans;" that the child's gaze should sometimes be directed to the star-strewn heavens; that it should be shown Sirius, Arcturus, Aldebaran; that its thoughts should be guided through the infinities by the rays of the stars, rays that bring the future closer before us, and unveil the coming years to man; that it should catch a glimpse in the white mist of the Pleiades, or in the Milky Way, of a dust of worlds, and in the other nebulæ—of worlds perhaps yet in process of formation. If, in addition to this, it is told how human science succeeded in penetrating the secret of these clouds of stars, if it is told about Pythagoras, Plato, and Aristotle, of Scipio's dream, of Ptolemy, Copernicus, Galileo, Descartes, and Newton, condensing all the movements of

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* *Vide* "Proposals of Commission in 1890."

† It is true that if he eventually marries a student from the girls' lyceums, she will be able to teach him cosmography, to which her master will have devoted an hour a week.

the earth into one formula, which we might write in the hollow of our hand; if we go beyond astronomical systems and introduce it to the philosophical systems of the cosmos; if it is told that the skies have ever been the object of the meditation of the wise; that all have found in what an abyss of final ignorance our science is lost, and how the compass of thought multiplies our "points of contact with the unknown," as the luminous sphere of our knowledge widens; if we add that the laws of numbers which rule the world, and make all movement intelligible, are not self-explanatory: that as most wise men have felt, these laws should have their explanation in something analogous to our intellect, in a something present within every being, or at least in a universal effort, a universal aspiration which no doubt is striving to expand within the depths of our hearts and to become self-conscious within our thought; that in any case, brute, lifeless matter arranged in infinitely varied figures could account for all, because there are beings who live and feel and think; if, in a word, the teacher of cosmography did not consider himself exclusively as a functionary of the State, who, for a fair salary, has to teach from eight in the morning to two in the afternoon, that the radius vector of the planets sweeps out areas proportional to the time; if he looked upon himself as an educator of youth—yes, even he; if he were persuaded that a certain idealism is necessary to education, and that we can at any time come into conflict with things of the earth, earthy; if he went so far as to tell his pupils, with Kant, that two marvels will ever fill man with admiration, the sky above our heads with its laws, and the moral law in our hearts—and that, perhaps, at bottom, these laws are identical, forming a single law which is obscure in the bright light of heaven, and dazzling in the dark depths of our consciousness;—this disinterested contemplation of visible and invisible infinities would seem to me of greater value than a practical acquaintance with slate, sandstone, or gypsum. He is no man who has never felt the "sacred horror" of Lucan beneath the vault of mighty oaks in druidical forests, a "sacred horror" still more impressive in the forest of stars beneath the vault of heaven.*

Even in chemistry, in my opinion, we must only teach—at any rate to literary students—what is necessary to all, what is beautiful and admirable what is a revelation of the elementary architecture of bodies, or the universal affinity, the existence of which throughout space is revealed by spectrum analysis. Here are two programmes in chemistry; the one passes in review the whole series of elements and of their principal combinations, and describes the preparations of sulphuric acid, hydrochloric acid, nitric acid, etc.; the other, after a rapid historical sketch of alchemy and chemistry, requires an examination of principles, of the connection between chemistry and physics and physiology, notions on chemical atoms and their structure, the relative or absolute simplicity of metals and metalloids, analysis and synthesis in chemistry, the limits and possible progress of our present knowledge in this domain, the impassable boundaries of the mechanics of atoms; added to this are the principal laws of the combinations of bodies, great discoveries such as that of spectrum analysis, their theoretical and practical and even social consequences, the revolutions effected in industry by these discoveries—in a word, openings and perspectives extending in every direction far beyond the descriptions of metals, acids, or salts. Of the two programmes, which would be the more interesting, and therefore the more easy for young students? General views remain in the memory with less effort than multiplicity of detail.

At the same time, which will be the more fruitful and educative course? To appreciate this point, a simple test is at hand, to which we should always have recourse when it is a matter of judging a syllabus. Suppose the pupil at the end of his course forgets all the substance of what he has learned (which in this case is nine times out of ten); what will be left to him of the former programmes? Nothing, or next to nothing. What will he remember of the latter? The whole spirit of chemical study, ineffaceable impressions, general elevation of thought; and finally a curiosity and a longing to satisfy it when opportunity arises, a respect for and a love of science. All formulas and nomenclature will be more or less gone, but a progress of thought will remain and persist, and finally a scientific aptitude quite ready to manifest itself if circumstances compel the youth to learn anew, and this time to retain the science of which he has forgotten the letter and kept the spirit. We may therefore say that chemistry, interpreted in a certain way and taught by a certain method, becomes a moral and even social science instead of being purely material; it becomes a *humane* science instead of being the knowledge of brute objects; and it is thus alone that it, with all other sciences treated in the same way, can take its legitimate rank in the "humanities." The highest aim of liberal education is to excite admiration; nothing, except it be absolutely necessary, should be taught to humanists if it is not admirable: *πολυμαθία νόον οὐ διδάσκει.*

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* After these pages were published in the *Revue des Deux Mondes*, the study of Cosmography was replaced in the programme for students between sixteen and seventeen.

Now what are the necessary sciences? Some sciences are capable of explanation, others are not at all, and others but imperfectly so. Thus mathematics and mechanics are perfectly explanatory; their analysis and synthesis reach as far as possible and give the sentiment of the inevitable, for what cannot be, is not. Effect is connected with cause and everything is luminous, transparent to the mind. Physics also may in a great measure be explained; there are complete theories—such as the theory of dew—which communicate the sense of necessity. With chemistry we begin to have no explanations. Why do oxygen and hydrogen in chemical combination make water, and how? We do not know, nor can we from the properties of the ingredients deduce the properties of the compound. We state the phenomenon by saying *so and so is the case*, or we produce it and say *so and so is going to happen*, you will see the hydrogen and oxygen combine and form water. "In chemistry," says M. Berthelot, "our power goes further than our knowledge." The other branches of natural science again are much less susceptible of explanation; life is still a mystery. To ascertain is not to explain. If we open a germinating grain of corn and totally destroy it, we are not grasping the great law of life, the secret of universal germination. The very functions of life can only be imperfectly explained. Why has the brain two hemispheres, and why is it constructed as it is? Why has this flower five petals and not six? Why has this soil one composition and not another? Here there is more and more of statement, description, relation. The really scientific part of natural history is beyond the scope of secondary education; the descriptive part is either too elementary or quite useless. Nature turns her kaleidoscope before us: we are content to note the figures as they succeed one to the other, an eglantine after a violet or a primrose, a lion after a tiger or an elephant.

But what is the use of giving the young a description of "games of love and chance"? We must say enough to awaken their imagination, to arouse admiration and curiosity; the rest is superfluous, being at bottom neither scientific nor philosophical. Education, therefore, as a profound and methodic study, needs only two typical sciences, the methods of which are equally typical, the one deductive, the other inductive—mathematics and physics. These are almost the only sciences which give opportunity for problems as well as note-taking, and consequently afford a mental exercise in their solutions. If it is true that practice makes perfect, the scientific spirit will not be acquired in sciences which leave the pupil nothing to find out or do for himself. It is to be regretted that in physics, experiments are not carried out by the boys themselves; but in spite of this, physics, the inductive science, *par excellence*, is the necessary complement of the deductive science—mathematics.

Again, even in mathematics and physics, we must confine ourselves to the fundamental principles and have them thoroughly learned. In Latin, after the three hundredth piece of translation, the pupil will certainly have had his mind more exercised than after the ninth; from Cornelius Nepos or Sallust, he will have gone on to Tacitus and Virgil; he will have solved a series of problems consisting in the discovery and expression of the thoughts of great writers; and he will have a wider knowledge of both Latin and French. But will a boy be more intelligent after his three hundredth theorem in geometry? Will his mind undergo a metamorphosis because he has proceeded to the ellipse after he has studied the circle? Will he be a different man because he has mastered simple equations and gone on to equations of the second degree? No, for, strictly speaking, from one theorem to another it is always the same. And will there be any intellectual progress in passing in chemistry from sulphur to iodine? or in botany, if we study the rubiaceæ and afterwards learn the characteristics of the primulaceæ? or if, after examining pieces of quartz, we go on to pieces of chalk?

The fact is that science-teaching, with its list of facts and laws linked together by no philosophical connection, only apparently causes mental progress; in reality the pupil is "marking time" on the same spot. It is just as if after having quoted a single instance of something, we were to proceed to give a thousand. This is not the case with moral science. If after having studied the laws of the sensibilities and of the passions we go on to those of the will and of the intellect; if we pass from logic to morals; if we raise ourselves to considerations on the nature and worth of existence, it is clear that we are not only advancing but ascending. If in political economy we study the laws of production and then the laws of exchange, we obviously shall have a more complete idea of the sources of wealth; if in politics after investigating the dangers and advantages of a monarchy, we turn to the dangers and advantages of democracy, we shall find our minds more accurately orientated than before. If in æsthetics we turn from the strength and weakness of idealism to the strength and weakness of realism, from different styles of poetry to the plastic arts and to music, we shall certainly find our taste more enlightened and our ideas broader. The moral and social sciences are a perpetual ascent; this is not so with mathematical and physical sciences unless they are studied on their philosophical, moral, and social side.

The school of Comte has based its pedagogy on the division of science adopted by their master—general and special sciences, for instance. General physics as opposed to meteorology, comparative anatomy as opposed to descriptive natural history. The number of the general sciences is infinitely less than that of the special sciences; and further, they also have that invaluable property for teaching purposes (as Comte tells) of condensation as far as is necessary, without a consequent losing sight of their double character of precision and generality. A few pages are enough for a clear and practical explanation of the acquired doctrines constituting "the higher expression and ultimate limit of human knowledge. This principle is a true one, and that is why our scientific teaching, instead of being swamped in the descriptive sciences—mere fugitive exercises of the memory—should keep to the general theory of science, illustrated by a few well-chosen applications.

II. Not only should the study of science be simplified on the lines I have now laid down, but it should be unified. The means is at hand, and forces itself upon our notice; the connecting link of the various sciences can only be philosophy. Two things are necessary. First, we must introduce into the study of each science the philosophic spirit and method, general views, the search for the most general principles and conclusions; we must then reduce the different sciences to unity by a sound training in philosophy which will be as obligatory to students in science as to students in literature.

The young only follow their master when they see the end in view and outlets issuing therefrom; if we cannot and ought not to make them see the practical application of each truth, we must make them see, so to speak, its theoretical application, *i.e.* its place and importance in the system of human knowledge. Science can only be thoroughly taught to the young by men of philosophical temperament, who will always see the part in the whole, and who will never lose sight of the hierarchy of truths.

First we must show the human side of science, the part played by the mind in its construction and in its discoveries; *i.e.* the method of each science, which is an application of general logic, should be the object of individual and attentive study. Moreover, the logic would not be entirely abstract, for it may be accompanied by the great examples afforded by the history of science. Scientific truths, said Descartes, are battles won; describe to the young the principal and most heroic of these battles; you will thus interest them in the results of science, and you will develop in them a scientific spirit by means of the enthusiasm for the conquest of truth; you will make them see the power of the reasoning which has led to discoveries in the past, and which will do so again in the future. How interesting arithmetic and geometry might be if we gave a short history of their principal theorems, if the child were mentally present at the labours of a Pythagoras, a Plato, a Euclid, or in modern times of a Viète, a Descartes, a Pascal, or a Leibnitz! Great theories, instead of being lifeless and anonymous abstractions, would become human, living truths, each with its own history, like a statue by Michael Angelo, or like a painting by Raphael.

At the same time, each scientific truth would have its morality. "Believe me," says Tyndall, "a self-renunciation which has something noble in it, and of which the world never hears, is often enacted in the private experience of the true votary of science." "Science," says Huxley, in his turn, "prospers exactly in proportion as it is religious; . . .

Truth has yielded herself rather to their patience, their love, their single-heartedness, and their self-denial, than to their logical acumen." Lastly, in Spencer's words, "Devotion to science is a tacit worship; . . . it is not a mere professed respect, but a respect proved by the sacrifice of time, thought, and labour."

This could not be better expressed, but here the writer is dealing with active discovery, and not with passively transmitted truth. Yes, the development of science and the progress of method is an epic, and it is far more important for the education of the young to be interested in this epic than to make them enumerate and write out lists of facts or laws. Science has an intrinsic poetry of its own; a Goethe, at once philosopher and poet, has no difficulty in finding this out, but our scientific instruction neglects to make understood and felt the poetry of science, which is blended with its very logic and with its history.

Besides the human and logical side of science we should exhibit its general and cosmological features. For that purpose, we must systematize the great results of different sciences, and make their connection clear. The really *scientific* part of science is the inter-connection of causes, and at the same this is its beautiful, its interesting, and its educative side. The history of the objects, the causes of which we see linked together, becomes a fragment of the history of the world, and *ipso facto* of our own history, because we are a part of the great whole—the intelligent part, namely, that which understands the causes. The individual mind is only satisfied by the connection of things with the universal, that is what gives it its grandeur, and this ideal link we may hope to seize with the mental eyes. Who will be so indifferent as to be uninterested in the cosmic system? That is where the real liberal value of scientific studies lies; they should give us an idea of the universe and of its great laws, of what the ancients called the cosmos. The part played in the universe by numbers, by geometrical forms, by motion, is as interesting to the mind as the particular study of a theorem in arithmetic and geometry is dull. If you are not continually widening the mental horizon of your boys, what interest can they take in the extraction of a square root or in a tangent to a circle? We must "Pythagorize," in the best sense of the word, and "Platonize;" we must reveal to them the elementary æsthetics in numbers and figures; we must show them how numbers rule the world, and how figures in space unveil to us the universal plan. In a word, we must show them both the human mind and the universe; apart from these two terms a scientific truth loses its interest and its scope; it can only have a practical and industrial interest.

III. In the first "cycle" of education, which is still almost primary, the descriptive natural sciences have their place. In the second cycle, which is expressly secondary, the typical sciences must be taught, and they are two—mathematics and physics. They are the only essential sciences and the basis of all the others. Chemistry already is, in a great measure, superfluous. Botany is scarcely any use, and geology even less; zoology should only reappear in the third cycle, which is semi-superior. At this stage general *biology* must be taught, the general laws of life and its evolution must be learned. In a word, the education in the natural sciences is either primary or higher; it is not properly secondary at all, or, at least, only its general theories and philosophical conclusions enter into secondary education. Every boy who has received a sound education in mathematics and physics possesses the instrument necessary for the study of science; the rest is only a matter of time, memory, and practice. Correct it also by Latin and his native literature, by a sound training in philosophy, by general notions of history, and you will secure the selection and development of scientific minds, and that by precisely the same means employed in the selection of literary minds. To mathematicians with a literary and philosophical training the rest of the sciences, with their technical applications, will offer no serious difficulty.

In France we are too much enamoured of uniformity—a false conception of unity—and we cannot in secondary education distinguish the immovable foundations — true humanities—from that which varies with the individual aptitude. For my own part, I should prefer unrelenting severity as far as the common foundations of classical education are concerned: the mother tongue, Latin, morals and philosophy, the history of civilization, the elements of mathematics and physics; and tolerant and flexible regulations with regard to Greek, modern languages, details of history, and details of geology, chemistry, cosmography, zoology, geography, etc. Do not ask parents to devote their children to a special career before they are thirteen years of age. Simply ask them if they want their children to be at their studies to nineteen, or even, in higher education, to twenty-one. It has been said that this is "the only question within the reach of all, and the parents alone are able to solve it." Then we might organize a unique system of secondary education with ramifications, final but simple, and determined by the aptitudes and by the tastes which have already shown themselves in the course of studies, by the forecast, as it were, of the future career. We might leave, in the last years of school-life, a certain latitude in the choice of special courses, joined to inexorable rules with regard to common and essential courses. If a pupil has in view the higher technical schools, he will only have to improve his scientific training by the choice of an appropriate course. He will do less Greek, less history and geography; he will not follow a course of literature, etc., but he will continue his work in Latin, his mother tongue, and philosophy. Although prepared for, say, an engineering school, he will, in fact, be none the less adapted for any liberal profession. With his Latin, the literature of his own country, philosophy, and the theory of science, he may become, with the proper complement of special study, a good magistrate or a good engineer, a good teacher or a good officer. His mental horizon will not have been narrowed down by the servile fashion of learning science, which is the preliminary "cookery" for our State schools. Would these schools lose if they were filled with men whose minds are really cultivated, complete, conversant with all that is great and noble in the mind, able to write good English or French, and in touch with most literary, moral, social, and philosophical questions?

In a word, strengthen the position of science by restricting it to what is fundamental for all, strengthen in the same way and by the same means the study of English and Latin literature, of general history, and of philosophy; give boys in their last years of school-life the choice between going on with their Greek or the study of a special branch of science; this would be the shortest way of maintaining the fundamental unity of secondary education; the same sap would nourish the whole tree, and the highest branches alone would be treated differently. This would produce a real equivalence between a literary and a scientific matriculant, from the point of view of moral and intellectual culture.

In France, teachers of science, whether elementary or a special branch, are perforce compelled to undertake the work of "coaches" when they should be educators. They do not teach science, they teach how to pass examinations, with the aid of all the petty traditions for that purpose. Thus pupils and professors alike are condemned to a vulgar utilitarianism. The different State schools have a false idea of really scientific education, for they take as their criterion quantity rather than quality. As Vauvenargues said, "we must not judge men by what they do not know, but by what they do know and how they know it." The justification given of these long programmes is not that all these subjects are necessary, but that the requirements must be multiplied so as to select the most capable men, and to eliminate the rest.

Now, these long programmes actually test nothing but the memory, and are no real test of capacity. Can there be anything more illogical, not to say more immoral, than to replace the appreciation of solid merit and good work by the machinery of a lottery? If you want selection because of the numbers of your candidates, an easy way is within reach—examine them in letters and philosophy. You may get candidates knowing less chemistry and physics, but you will certainly get men who will in the long run do you far more credit than men whose culture is less complete. In great schools, as elsewhere, "heads well made are better than heads well filled."

IV. It is not enough for the teaching of science to be animated by a philosophical spirit; it must have its complement, and, in a measure, its counterpoise, in a sound training in philosophy.

Secondary instruction has two main aims; it must, in the first place, furnish those who will not pursue their studies after school-life with a culture that is sufficient for the functions of private life, the family, and the State; in the second place, it must give to others the knowledge that is necessary for them to profit by higher instruction. Now, philosophy is essential for the introduction of unity among the different branches of science, among the different branches of literature, and finally, between science and literature, between natural laws and social and historical laws. From this unity alone springs a scientific conception of the world and a higher rule of conduct for those who do not pursue their studies further. Secondary education must make towards a philosophy of nature, and a moral and social philosophy. Without these it remains anarchic, divorced from its principles, from its consequences, from its aims; it is analysis without synthesis, or, as Aristotle would say, a bad drama made up of episodes. Philosophy is therefore essential to all who have to be contented with secondary instruction; they must carry away from their studies general conclusions as to nature, and the laws and ends of individual or collective existence. Moreover, moral and social science is the only science that is of itself educative, because it furnishes our highest faculties with both exercise and nourishment; all other science should, therefore, tend towards it. By the simple word *science* the French, says Dubois-Reymond, understand the sciences of nature (*Naturwissenschaft*), and by the simple word *Wissenschaft* the Germans understand mental science (*Geisteswissenschaft*).

Besides, philosophy is the only training in which the pupil is active as long as he is listening to his master, instead of becoming a "mechanical notebook." We cannot thoroughly learn psychology, logic, or ethics without understanding them; we cannot understand them without in a measure re-constructing or re-thinking them, without self-reflection and continual mastery in our consciousness of the words of the teacher; instead of being passively present at a material experiment, as in a lecture on physics, or listening to a description of anatomical pictures, as in a course of natural history, the student of philosophy is continually compelled to refer to his inmost experience, to his personal recollections, to what he has seen, heard, or felt. The master, too, questions him in the maïeutic method of Socrates. According to D'Alembert, two things are necessary to acquire sagacity, the best of mental qualities—"self-exercise by rigorous demonstrations, and *not to confine one's self to it.*" We must first accustom ourselves to the recognition of the truth in all its purity, to be able to afterwards distinguish it from what is more or less near it; but it is to be feared that "the too vigorous and continuous habit of absolute and rigid truth dulls the sense of what is not truth." Ordinary eyes, habituated to brilliant light, no longer are able to distinguish the gradations of a weaker light, and only see thick darkness where others catch a glimpse of faint brightness. Hence the contempt of certain *savants* for philosophers. However, "the mind which only recognizes the truth when it is directly affected by it, is far below that which not only recognizes it when close at hand, but can detect it at a distance by its fugitive characteristics." We must, therefore, accustom ourselves to passing without difficulty from light to dusk. In moral and social life we are dealing with the uncertain; what is, in my opinion, important, is, therefore, not so much the acquisition of knowledge, as the art of divination, the sense of the beautiful, of the good, of the "becoming." Every education leaving this sense undeveloped may perhaps turn out artisans, but it certainly will never make men and citizens.

On the other hand, philosophy is no less necessary to those who will eventually receive a higher training. In fact, higher education in itself is a specialization—law, medicine, science, history, literature, philology, theology. All students in the higher courses are not compelled to follow a course of philosophy; and, besides, philosophy in higher education can no longer take the form of a regular and complete course; it itself specializes; and to be fruitfully pursued, the study of the particular question specialized needs a preliminary acquaintance with the whole field of philosophy. To count on higher education to initiate young minds into philosophy is, therefore, a mere chimera. And, further, young men who proceed to higher work without a preliminary philosophical training are unable to use to the best advantage the instruction given them. They have no criterion, no general views, no way of combining and coordinating their special studies into a conception of the world, of life, and of society. Their so-called higher work will really remain inferior work; they will be workmen in physics, chemistry, history, literature, etc.; but they will not have that elevated, disinterested, liberal, and universal spirit which should be the spirit of the *universities*.

Men of science more than any others should know the limits of science. They are led, in fact, either to step over the bounds of knowledge in their assertions, or to introduce into science itself metaphysical hypotheses. Science tends to become, as it were, a new divinity, whose prophets are the *savants*, and whose worship has its fanatics. Kant inaugurated the era of our modern philosophy by criticizing our means of knowledge, and by laying down the boundaries beyond which knowledge cannot pass; *alte terminus hærens*. The principal German scientists are saturated with the critical spirit, and in their writings they are fond of showing us where our knowledge must stop. The magnificent addresses of Dubois-Reymond on the limits of natural knowledge and on the seven enigmas of the world will occur to the reader, with those of Virchow, Haeckel, and Naegeli on kindred topics. In England, Tyndall's address on the limits of science has become a classic. Do not leave the young to the exclusive study of science, and to the pride this study may develop, without showing them the points on which we must say with the modesty of Socrates of old, "What we do know is that we know nothing." One of two things befalls all men of science who have received no philosophical culture; they either remain in an attitude of complete indifference and positivist scepticism, or they fashion a more or less novel philosophy for themselves. The lucubrations of more than one old pupil of the École Polytechnique show us that the geometrical spirit is far from excluding the spirit of chimera.* The young man must therefore receive from philosophy an explanation of the facts of science already known to him, a rule for higher scientific research, and finally a view of the limits beyond which scientific knowledge cannot pass, and beyond which lies the realm of belief.

Philosophy was not long since suppressed in France for the sake of those boys who were preparing for a scientific career, or for the great schools. Now these are precisely the lads who have most need of philosophy, for, as we have seen, moral and æsthetic culture is especially necessary to our future *savants*.

To sum up,—the teaching of science should be organized with a view to general culture, and so as to form by itself a real system of humanities. At the same time, it should secure the selection of scientific capacities, and thus prepare for the nation the *élite* of scientific men it needs. To attain this twofold object, it is not the quantity of knowledge acquired that is to be considered—and that is the blunder committed by those who have drawn up the various programmes for examinations. The important thing is the quality, the method, and the organization of knowledge. The quality of knowledge consists in its being rational instead of being mechanical and merely mnemotechnical; the method must be active and philosophical; the organization must tend towards a philosophy of nature and a philosophy of manners. Vogt tells a story of the clock-maker of Strasbourg. The town council, fearing lest the great constructor of this *chef d'œuvre* should make a still more wonderful clock for some other city, determined to put out his eyes. He asked as a last favour to be allowed to see and to touch his clock once more. He went up to it and took out a little "collar." Then the savage deed was done. But the clock would not go; its wheels revolved all right, but they had been thrown out of gear. The study of science without philosophy produces a similar effect on the brain; the cerebral wheels turn round each in its proper place, but they are out of gear, and the hand does not mark the hour. All unity has disappeared; it is a machine the easier to put out of order the more complicated it is. The little collar which would keep everything in its proper direction is missing, and the so-called scientific education becomes intellectual infatuation. True education should form an organism, animated throughout by the same spirit, regulated by the same method, tending to the same end. The different sciences should be taught not for themselves, but for the whole of which they form a part, for *science*. They should therefore be linked together instead of following one another in the disorderly sequence of a modern syllabus, and their connection should be of such a character as to ensure the progressive development of a conception of nature and life. They should, in spite of the diversity of their objects, exhibit in process the only and identical evolution of things and men. The same gymnastics are necessary for a man whether destined for a literary or for a scientific career; the thought of a genius and the thought of nature with its universal attraction need, to be thoroughly understood, a similar development of the intellect, a similar faculty of divination. The philosophic spirit alone can animate mathematics or physics; it will give them an object, a direction, and a value quite different from the "value of commercial application" which alone affects an Edison. The student poring over chemical or mechanical formulas will no longer be heard saying, "What does it matter to me? I am not to be a chemist or an engineer." With that portion of universal and, in a measure, cosmical truth exhibited by the philosopher in the partial laws and in the particular theories of science, is disclosed that portion of eternal beauty contained in these laws and theorems; they are illumined by a ray from the infinite.

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* Victor Considérant, to quote only one instance.

The power of philosophic influence is the supreme criterion of the intellectual and scientific vitality of a race; of this, Greece, France in the seventeenth and eighteenth centuries, Germany in the nineteenth, are the most effective proofs. The scientific hegemony has never been and never will be with an unlettered and unphilosophic nation; the progress of science is in inverse ratio to that of a mechanical and utilitarian teaching of science, while it is in direct ratio to the progress of literary and philosophical culture. The same may be said of the political hegemony. Not only have we seen German generals triumph over French armies, but we have also seen the triumph of the speculative geniuses of Germany, of those who during the last century have given an impetus to German literature, philosophy, and science, and *ipso facto* to "public spirit;" we have been defeated by Kant and Fichte, by Goethe and Schiller, by Alexander and William de Humboldt, by Gauss and Helmholtz, as well as by Bismarck and Moltke.

French *savants* in the last century were great theorists; when the defence of the country called for it they became great practicians, and were able to provide almost at once, armies, soldiers' clothes and munitions of war. Clouet invented a process for turning iron into cast steel; Vandermonde manufactured powder; Berthollet coined money; De la Rochelle made arms, Guyton-Morveau tempered the blades of sabres, and with Coutelle and Conté he constructed balloons and directed companies of aeronauts. Chappe organized the telegraph. Monge, the inventor of descriptive geometry, made cannon and drilled their bores, and undertook the refining of steel, a new art which France owed to him. Powder was the greatest difficulty. Saltpetre was found in the ruins of Lyons, and sulphur in the burned forests of La Vendée. Chemistry improvised a new method of refining and drying sulphur in a few days. To supply the mills, men rolled barrels containing carbon, saltpetre, sulphur, and copper balls, and powder was made in twelve hours. "Thus," says Biot, "was verified the audacious idea of a member of the Committee of Public Safety; we shall show them the saltpetre in the earth, and in five days we shall be loading our cannon." * Thus, I may add, speculative enthusiasm was tranformed into active enthusiasm, and from the peaks of science, as from a new Olympus, the most abstract principles descended like the gods of Homer into the war of nations.

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* "Histoire des Sciences Pendant la Révolution," p. 54.

BOOK III.

THE CLASSICAL HUMANITIES FROM THE NATIONAL STANDPOINT.

EDUCATION is the development of the mind subject to the laws of all evolution, individual or collective. Hence the problem recently proposed in Germany and in England: Does the doctrine of evolution justify a study of the classics from the twofold standpoint of individual and of national development? The answers are very varied, both in England, where Spencer and Bain attack the study of Greek and Latin, and in Germany, where Preyer, Haeckel, and Goering reject the classics and Vaihinger defends them.* In France, curiously enough, Latin and Greek are attacked from the rear by most of the pure *littérateurs*, and by rhetoricians who have become journalists, like M. Frary; they are advocated, on the other hand, by philosophers such as MM. Ravaisson, Renouvier, Renan, Lachelier, Guyau, Rabier, and many others, as well as by literary critics with philosophical views, such as M. Brunetière. The same discussion has been going on in Italy, where a distinguished philosopher, M. Fornelli, has just published a very complete defence of classical education.† The question, apart from its speculative importance, is not only of scholastic, but of national and international interest. It is not enough to discuss—as in most cases the disputants are content to do—the intrinsic value of this or that subject considered in itself; we must estimate its relative value and place in the whole, its influence on the development of the national mind, and finally its greater or less utility in the maintenance of national in contact with foreign influences. A nation intent upon its future can neither abstract itself from its own past, nor from its present relations with other nations.

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* "Naturforschung und Schule."

† "La Pedagogia e l'Insegnamento Classico."

After a preliminary word as to the very general applications made of the theory of evolution in pedagogy, I shall endeavour to show that our choice must be determined by national evolution, and not, as Spencer assumes, by human evolution alone.

CHAPTER I.

OF THE PARALLEL BETWEEN HUMAN EVOLUTION AND INDIVIDUAL EVOLUTION.

THE principles of evolutionary pedagogy, so skilfully handled by Vaihinger and Preyer and Spencer, are the following: (1) Man, the final result of zoological evolution, comprises in himself the preceding forms of life, according to "ontogenetic and philogenetic laws," *i.e.* according to the conditions of the genesis of the individuals of the race; (2) Man is subject to physiological and psychological heredity; by the exercise of those faculties he develops his inherited energies in the social environment, and transforms them into equivalents of a higher order; (3) Man has a life that is not merely individual, but collective; individuals and the community are mutually blended. If social life may be considered as the result of the lives of individuals, it is equally true, on the other hand, that the development of each individual may be considered as the effect and average of the social organism. Consequently, pedagogy can only become a science in so far as it is based on "physio-psychology" on the one hand, and on sociology on the other.

The following famous law was laid down as a basis for the science of education by Auguste Comte: "Individual evolution should be in conformity to collective evolution." In this somewhat vague form, the fundamental rule of evolutionistic pedagogy may certainly be justified. The development of the individual in every scale of the animal kingdom, passes through the principal stages through which the species has passed; we know that the successive stages of the human embryo present us, in brief, with the history of life on the earth and succession of its principal forms. The laws of heredity show that a certain conformity of individual development to the development of the species is inevitable; each individual is, so to speak, a particular specimen in which are to be found the essential features of the race. From the point of view of education, if the development of the individual and that of the race proceed along the same lines, the former will be accomplished with greater facility, because it will be more in conformity with the hereditary adaptation of the brain. Finally, the harmony of the individual and collective development is justified by the very end education should have in view, which is, strictly speaking, the subordination of the individual to the ends of the whole community. The individual must realize in himself the social ideal; he must be the community in miniature, not only as it is, but as it should be and as it tends to be. In a word, man must live the life of humanity as a whole, and must therefore be doubly a man.

But, if the general principle of evolution is applied to the education of youth, it must be carefully interpreted as we pass on to particular consequences. According as we are seeking conformity, especially in individual education, to the past evolution of humanity, its present state, or its future evolutions, we have three roads open to us; there is, so to speak, a struggle between the past, the present, and the future. The problem of education is to conciliate these three points of view. In my opinion, the most important is conformity to the ideal of future humanity; harmony with existing humanity is the first means of attaining this end, and harmony with past humanity is a second but more indirect means. On the latter, previously advocated by the pedagogic school of Herbart, Vaihinger has laid most emphasis. "The history of the gradual evolution of humanity is called in these days the history of civilization. We may therefore deduce from the fundamental law of the genesis of life, the law of mental genesis, formulated as follows: the intellectual development of each single individual should be a summary of the historical pages of the culture of humanity." * "Whoever wishes to attain to the level of our present civilization," wrote Ziller, a Herbartian, "must pass through the same stages of development as humanity in the progress of its culture." From this Vaihinger deduces the legitimacy of classical education, independently of any reform in it that may be considered desirable.

This is going rather too fast. How can we pass immediately from a physiological law to a very general mental law? Let us now see contradictory deductions drawn from the same general principles. Vaihinger concludes in favour of a classical education; Spencer in favour of a scientific training—illogically, in my opinion. As for Ziller, he invented his famous system of *concentration*, *i.e.* he took each year an historical period as a centre, around which all other subjects were grouped—even natural history, drawing, and geography. For example, with third year of school-life, the history of the patriarchs; fourth, the judges of Israel; fifth, the kings of Israel; sixth, the life of Jesus; seventh, the apostles; eighth, the Reformation.

However, there is a profound truth in the law of parallelism between individual and collective development; but we must first apply this law to the method and general spirit of education. Method should proceed from the simple to the complex,† from the easy to the difficult, from the concrete to the abstract; it should also reproduce the characteristic of *spontaneous activity* presented by the development of humanity, so that the child can find out as much as possible by itself, and, by acting and thinking, experience the pleasure of acting and thinking. But we cannot allow that for this purpose it is necessary for the child to go through all the intermediate and historic stages through which humanity itself has passed. Moreover, it is by no means certain that the mental state of a civilized child is identical with, or at least analogous to, that of the infantile phase of humanity. Even supposing the analogy existed, we may fairly ask if education should undertake to second the child's barbarous and savage tendencies, if it should not rather correct them by the aid of thousands and thousands of years of civilization. In fact, naturalism in pedagogy takes no account of two essential elements which present the methods of education from being identical with those of spontaneous development; namely, language and literature.

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* Spencer, "Education," § 4, p. 75 (*Tr.*).

† *Ibid.* p. 73, *et seq.*

Language is a product of the accumulated reasoning of man, and also of man's observation and reflection. Learning to speak is an advance in mental evolution with all the acquired rapidity of centuries; it is flying with the wings obtained by the human intellect, just as the bird when it leaves the nest for the first time flies at once with the wings acquired by the race; it is a profiting by all the selections and by all the victories which have marked the struggle for existence throughout the ages. To language add literature, which has been rightly called "humanity in miniature," and the evolution of the individual mind will be still further accelerated. All the gropings in the dark, the errors and defects of thought, are at once suppressed, and the child is transported to the goal without having gone through the intermediary stages. We only take the trouble to be born, and we become a man, an Englishman or Frenchman; so, if we only open a book we can ride roughshod over centuries, and we may find ourselves further advanced than Euclid, Descartes, Leibnitz, or Newton. The disciples of Spencer declaim in vain against books and "book learning;" the answer is that a distinction must be drawn between the first education and the second. We should not allow books to be abused while the child is still young, for its spontaneous development should be respected; in the second stage the book is the very basis of instruction ; it establishes an evident contrast between spontaneous and artificial education. In a word, there are two factors in education—nature and civilization ; books are the second factor, in these days more powerful than ever—they may be called the *social* factor. Books are social evolution at once fixed and accelerated.

It follows from the preceding remarks that the parallel between the individual and the race should be only brought to bear on very general faculties and their legitimate use. It may also be granted that there are general mental states through which the individual passes, just as humanity passed through them. Comte proposed, in virtue of this doctrine, that we should rise professedly from the theological or imaginative stage to the metaphysical or abstract, and thence to the scientific or positive. The theory of the three stages may be doubtful, but the principle is a true one, and it is certain that education is a series of "mental states," a development of the collective mind within the individual. The mind, like the body, has its ages ; we cannot expect an old head on young shoulders.

If, from the subjective point of view of the faculties to be developed, we pass to that of the objects of instruction, the law of parallelism still obtains. There are groups of objects with which humanity is familiarized by a gradation which is also imposed on individuals. But these are only general results, and, so to speak, the general forms of knowledge which should be in turn reflected in the mind of the young. The laws of physiological development support the theory, for what the individual reproduces successively in his evolution is only the *typical* intermediary forms, and consequently the successive syntheses in which the stages of progress were recorded. Plato would have said that these are ideas successively realized. Like scientific instruction, literary and historical instruction must proceed by syntheses, *i.e.* by the successive recognition of the great typical forms of the human mind in their good, beautiful, and durable aspects—and that in the order of successive appropriation by the child's mind.

Spencer, with Vico and Comte, asserts that we must proceed from sensible observation to reflection, from the empiric to the rational, from the simple to the complex; in morals even, he recommends starting from a low ideal, within the child's mental reach, and not exacting from them a moral precocity as dangerous in its way as physical precocity, a precocity which, if we take instances of prodigies of juvenile virtue, may produce in the long run mediocre or even vicious men.* Why does not Spencer apply the theory of evolution to intellectual education? Why does he expect from the child a scientific precocity which would be as detrimental as moral precocity? Why does he not recognize that between the great classics (particularly those of humanity in its early days) and the imagination of youth, there is a kind of harmony and "adaptation"? If the child should be progressively introduced to the ideas and sentiments of the race, if these ideas and sentiments are fixed in language and literature, it follows that the study of letters is the great introduction to morals and to social science. How can we expect the child by an entirely spontaneous evolution to find for himself the thoughts which have become a human and national inheritance? To find new ideas and new sentiments is nothing but the act of genius. Genius, like nature, creates; genius proceeds from depth to form, from bird to flower; the child can only pass from forms to depths to penetrate little by little the secrets of life and thought. To cultivate letters first and science afterwards, is to pass from imagination and sentiment to reasoning, from the concrete to the abstract, from general to special knowledge, from the complete to the partial exercise of the mind, from what acts on the heart and even on the character, to what only acts on the understanding or on the memory. The child's intelligence, at the outset of its evolution, cannot grasp the abstractions of science; besides, these abstractions would produce a one-sided mental development, and therefore a deformation. Literature, on the contrary, furnishes a young man with, as it were, a pedal note or fundamental bass for the harmonious development of his mind, a note which will never cease to vibrate throughout the course of his studies, and even of his life.

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* Spencer, "Education," pp. 73, 135 (Tr.).

Spencer, inspired by Kant and Schiller, has recognized the intimate analogy between the æsthetic sentiment and games, because both constitute an easy and disinterested exercise of our faculties for their own sake, apart from the tyranny of material needs. On the other hand, he does not ignore the value of games, and he even asserts that they are the best gymnastics for the body, because the most natural, general, and agreeable; all scientific gymnastics with apparatus and systematic movements of particular limbs run the risk of disequilibrating the organism. Why, then, does he forget these principles when he passes on to mental gymnastics? Literature exercises all the mental functions simultaneously, and gives them the supremely easy motion which Spencer lays down as the elementary basis of grace. Literature, poetry, and eloquence are the Olympic games of thought; by them thought is strengthened and glorified.

But, if literature is capable of giving free play to the artistic spirit, it is at the same time as serious a study as art itself. The true reason for its pre-eminence in education is that it is a free and living philosophy. It is a comprehensive view of the whole world—first, the world of the senses and of the imagination (the first with which children come into touch), and, secondly, the intellectual, moral, and social world; it is a series of vistas of art, morals, and science. And it is something more than this; it is, if I may say so, the beating of the heart of humanity, a beating that must be felt by all if we do not wish it stopped.

Another essential principle of the evolutionistic pedagogy is, as we have seen, that mental evolution should be due to the personal activity of the child, and not to passive instruction;

now, literary exercises—translation, composition, analyses, and explanations—are the principal means of setting in play the intellectual initiation of children or young men; I have shown that scientific instruction is entirely passive. The book of science appeals to little but the memory or to deductive reasoning; it only exercises a certain faculty, certain cellules of the brain, and those always the same, and always in the same direction. Either it leaves the student inert, or it demands an exaggerated and, into the bargain, a wearisome effort of comprehension on an isolated point; as for invention, it does not call it into play. Thus it is like the scientific gymnastics above, which, repressing all freedom of initiative, impose on a certain muscle determined on beforehand, repeated, fatiguing, and uninteresting work. The more energetic this exercise, the more dangerous it is; children whom we want to make athletes remain abortions, children whom we want to turn into precocious *savants* remain imbeciles. Literature also appeals in succession to all the mental faculties; in addition to the information we receive from it, it opens new fields to our view; not only does it make us understand, but it makes us reflect and discover. It is not merely *indicative*, if I may say so, of these or those facts observed or laws demonstrated; it is suggestive; by the association of ideas and sentiments it excites the young not so much to recollection as to thought. Besides, science leads inevitably to over-pressure, and therefore to premature exhaustion of the intellectual forces it professes to develop. Literature, on the contrary, is a relaxation in work itself, a pleasure in effort; not unjustly does Descartes call this kind of reading "conversation with the greatest minds of the past," and "studied conversation" in which, only giving of their best, they develop by sympathy what is best in others.

Thus the theory of evolution—contrary to the idea of its promoters, whose deductions are inaccurate—leads to the pre-eminence of literary over scientific education. Goering calls his gymnasiums *schools of life*, but the object of education is not, as Spencer and Goering seem to suppose, to make children live in advance the life that awaits them later, with all its after prosaic and melancholy realities; its object is to make them live a simpler, a more intellectual and a more imaginative life, a life, in a word, which is younger and more ideal, and which will be a preparation for the other. Of course, there need be no discord between the studies of youth and the real life of ripened age; but there should be a real evolution from one to the other, the former being a slow accumulation of intellectual and moral and *ipso facto* of social forces, the latter an expenditure and expansion of acquired forces, to the advantage of society itself. Hence education should be a culture of the most essential and most fundamental of the human faculties, upon which depends the development of the others; and what are they but good sense, imagination kept well under control, taste, natural, simple, and noble sentiments, the love of the good and the beautiful, patriotism, admiration, and enthusiasm, which make the heart eternally young? These are not "superfluous" or even "useful," but they are what is really "necessary" to life. Besides, among the qualities one has a right to expect in a cultivated mind, there are some which are acquired and learned, while genius is not learned; there are faults to be avoided, which genius does not always know how to avoid. Now, while favouring the selection of genius or superiorities, we must nevertheless cultivate in each individual those qualities which may be acquired, just as we must eradicate the faults that can be rooted out. These, then, are the essential characteristics of a classical education; it must be young, sound, strict, sensible, rather logical than emotional, and where emotion does come into play it should only be for the simple and noble, the general and the generous. In a word, we have to establish foundations upon which each will later erect his own humble or lofty dwelling; but the foundations must be really *humane* if we wish this education to conform to both the normal evolution of the whole of humanity, and to that of young minds in particular.

CHAPTER II.

GREAT NATIONAL INTERESTS AND THE CLASSICAL HUMANITIES.

If the theory of evolution, applied to problems in pedagogy, has so far only led to very general and often rather vague conclusions, it is because the middle term between humanity and the individual—nationality, to wit—has not been introduced. I am now going to re-establish this middle term. It is not enough, in fact, for the development of the individual to be, with Comte and Spencer, in harmony with the development of the whole of humanity; it must also be more particularly in harmony with national development, of which it is a summary, and to which it contributes.

There can be no national evolution without a literary, scientific, and political *élite;* every nation needs *savants*, men of letters, and philosophers; every nation needs a directing class, capable of preserving national traditions and at the same time of contributing to the progress the age requires. In other words, there is a kind of national brain which it is important to supply with the nourishment best adapted to the direction of the whole organism. On the other hand, a nation is in equal need of farmers, manufacturers, merchants, and finally of artisans and labourers. But between these groups of men and professions equally necessary to the evolution of the whole, there is, however, an hierarchy, just as there is between the stomach and the brain in the living body, which are equally necessary to the evolution of the organism. The economical necessities of a nation are also material, and correspond, at bottom, to vegetable or animal life ; intellectual, æsthetic, moral, and political needs, on the contrary, are properly part of the human life, and answer to the higher necessities. If economic prosperity is the great means of preservation for a people, intellectual and moral prosperity is the great means of progress. Further, as evolution advances, factors of a moral and intellectual order play a more predominant part, and become even the conditions of all the rest ; without theoretical science there can be no industry ; with moral and social science there can be neither political security nor social progress. It is therefore of the utmost importance to a people to organize a secondary education from which by selection superior capacities may issue, and which, on the other hand, may give to the country an enlightened class, truly liberal, and truly worthy from its disinterested views to be the directing class. The great object of secondary education is to train up men into disinterested views in speculation and politics, and this education is therefore neither directly professional nor "special." Outside this sphere, sometimes above and sometimes below it, is room for professional training either of a higher or of a lower order ; but it is essential to maintain the hierarchy of the instruction, not to allow a more or less disguised professional instruction, with industrial, commercial, and agricultural objects, to become, whatever name it may assume, the equal of the real "humanities," *i.e.* science, literature, and philosophy. As we shall see further on, professional and technical instruction of every stage, of every type, should be boldly and soundly organized ; but it must not be detrimental to the teaching of the humanities, nor must it be substituted for the humanities. In a word, economic utilitarianism should not stifle the disinterested pursuit of science, letters, arts, philosophy, and politics, for the supreme interest for any nation is this very disinterestedness.

This then, I repeat, is the first principle from which we start—a nation needs a liberal education on a soundly organized basis, and a system of special or professional instruction equally well adapted to the particular utilities it represents. My second principle is that secondary instruction must be in harmony with the spirit of the nation, with its habits and aptitudes, with its history, with the traditions of its education, with its language, its literature, and its arts ; in short, with the forms and essential conditions of the national evolution. Primary education is one thing, secondary education another. The latter alone, having as its object the formation of *enlightened* minds—*i.e.* minds self-conscious, conscious of their individual and national function and of their origin—should be a summary of the great phases of national civilization ; it should cherish and develop a spiritual organism in which live again the different organisms whose totality has made the life of the nation. Let us see what a liberal education should be for those who can receive it and receive it in its fullest form.*

I. The first question is this : Is the knowledge of the literature of one's own country enough in secondary education ? Now, if we look at it from the national standpoint, experience shows us that it is no longer enough in these days for a nation which aspires to be superior, to study its own language and its own literature. That kind of national monologue which was possible when communication between nations was more restricted is here impossible ; it narrows the mind, and eventually deforms it. In fact, ancient literature introduces the moderns to art, science, and civic life ; the French and German literatures have in their turn influenced each other and English literature. As M. Maneuvrier says, modern literatures have not been spontaneously generated. From the time of the Greeks, every great literary renaissance proceeded from contact with another literature, principally with ancient literature, and if the literary spirit persists from generation to generation in a nation, it is owing to this perpetual contact.

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* We shall see in the next book what kind of training, still general, but inferior to a classical training and not enjoying the same privileges, ought to be given to those who are early compelled by material and professional requirements to engage in industry, commerce, and agriculture.

On the other hand, from the point of view of individual development, the study of the mother tongue is only sufficient in the case of exceptionally gifted minds. Secondary education should be regulated according to the average, and not according to exceptional students; now, on the average, to the culture essential to the humanities, the study of a tongue other than the mother tongue is the shortest and surest method. A Frenchman, for instance, has a quick mind and a versatile intellect; but the very facility with which he uses his intellect does not leave him enough time for reflection. When a French boy is reading a French book, unless he enjoys unusual reflective faculties, his mind is carried away by the general sense, and the details and shades of expression escape him. As M. Rabier says, "A French child reading a page of Pascal or Bossuet does not fully grasp it, *i.e.* only half grasps it." Exercises and translations force the child to weigh every word, to ascertain its exact meaning, to find its equivalent; he must also consider the inter-relations of the ideas and words in order to fix the sense concealed in the text; finally, he must transpose the whole from one language to another, just as a musician transposes an air. The final result is that he has repeated for himself the labours of the thinker and writer; he has re-thought their thoughts, and has revived the living form which was organic to the writer's thought. He has had to reproduce a work of art. A cursory perusal of works in the mother tongue is rather like a stroll through a museum; translation from one language to another is like copying a picture; the one makes amateurs, the other artists. In this way the sense of depth and the sense of form are simultaneously acquired. And, further, the student acquires initiative, a quality particularly necessary to French and other children, in that they are—the French, at any rate—rather "apish." It is so easy for them to imitate that they rarely think of doing things of themselves. Bain and Spencer have in vain endeavoured to maintain the paradox that the study of languages "tends to increase undue respect for authority;" it is, on the contrary, the teaching of science *ex professo* which makes the pupils inert. "How can any one question the accuracy of a table of logarithms or of the laws of gravity?" The French youth, by its faculty of rapid assimilation, has very soon changed the study of science into a purely mechanical "knack," and into an application of ready-made formulas.

II. We have now to inquire what language in addition to the mother tongue should be chosen by preference for the development of the young. Here begins the great struggle between "ancient humanities" and "modern humanities." Let us first of all sum up and systematize all the reasons in favour of the study of Latin, and, if possible, add new reasons drawn from the laws of national and of individual evolution. As the attack has never varied, the same defence may be maintained.

The evolution of the national mind cannot operate without a constant solidarity with that part of the past from which the present springs. How can it be denied that there exists in every race and in every nationality a kind of intellectual heredity? By this it transmits a certain common spirit, which is the genius of the whole race, the soul of the country. This intellectual and moral solidarity completes the organic solidarity, linking each generation to the indefinite series of its predecessors. Now, it is very evident that the French have historic and organic links with the Latin world, which still partially exists in France in the modern world.

Is tradition, so often invoked in favour of the classics, only a prejudice, or is it a reason not only truly philosophical but at the same time patriotic? The following is the answer of one who is no stranger to that part of social science called by the Germans the psychology of peoples—

Völkerpsychologie. Every tradition based on nature and law is simply one of the essential conditions of preservation without which no evolution is possible for a nation. If blind attachment to tradition involves immobility, the no less blind contempt for national tradition no less involves it, for it suppresses living forces from which movement may be derived; it deprives a nation of the power of marching like one man, under the pretext of enabling them to fly. In nature there is no evolution apart from continual repetition combined with graduated progress. A ray of light only advances by the incessant repetition of the same undulation. The maintenance of the type in a living being is a repetition of the same forms; by the change of ephemeral cellules it ensures the persistence and unity of the living being. From the psychological point of view, memory plays the same *rôle;* it preserves and repeats; by this it swells the present by the whole series of past sensations; without it, the consciousness, reduced to a passing flash, would only shine to be extinguished; the living being would have ceased to exist for itself. The social organism is subject to similar laws to those governing the individual organism, and collective consciousness also owes its existence to the memory of the past.* History is not the whole of this memory; I may even say that history is the most superficial and external memory of communities. Literature is connected with it in a far different fashion; it is memory organized and active, an ever-present consciousness not only of great deeds in the national life, but a consciousness cognisant of its inmost sources, the sentiments that have inspired it and the ideas that have directed it. If the English evolutionists have specially insisted on the resemblance between the living and the social organism, the German evolutionists have by preference insisted on the analogy between the collective and individual consciousness. They do not consider the national spirit as a mere abstraction denoting the resultant of an aggregate of individual minds; they attribute reality to the national mind. Without going with them so far as this, we may agree that there is a certain French or German spirit which is not merely the sum total of individual minds at this moment in France or Germany. We may also agree that this national spirit has its conditions of preservation, which are at the same time the primary conditions of its progress, and that a nation which, by the education of its youth, should violate in any point its hereditary *ego*, its national individuality, would, *ipso facto*, be attempting suicide.

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* On the importance of the law of repetition and imitation in society, see M. Tarde's very original and suggestive volume, "Les Lois d'Imitation."

In fact, deep within great national traditions there are further restricted traditions, which maintain in certain classes a common spirit, and thereby establish a hierarchy in the depths of the general equality. The ruling classes in France have always, up to now, had a classical culture which comes to us from Rome, and, through Rome, from Greece. This culture is only the manifestation, more visible in the minds of an *élite*, of the influence exercised upon our whole race by Græço-Roman antiquity. Have we any right to repudiate this heritage, or, to go further, this heredity, to break with the literary and artistic part of France, which itself is very largely a legacy from Greece and Rome? It has been asked—What is the use of Latin? It is useful as maintaining, in the first place, classical tradition, which is a national tradition, and consequently it serves to revive continually in successive generations the ancient spirit blended with the spirit of France. Can it be said that tradition must necessarily preclude all progress? Assuredly, no; but in the training of an enlightened youth it is the preliminary condition of the progress which the youth when he reaches manhood may be able to accomplish. Without continuity, especially in education, there is no permanent progress; there may be revolution, but there will be no evolution; now, revolution cannot change in a day the spirit of a nation. The national inheritance must therefore be preserved, especially in the young, so that later new riches may be added to it. If, with liberal training of the influential classes, we lower and suppress classical culture, we stifle the French spirit by trying to force its nature and talent to apply it abruptly to quite a new order of ideas and studies, we crush the intellectual and moral solidarity of the generations. People are very often content to say that Latin is useful for the comprehension and writing of French (always the utilitarian point of view); we see that its true value lies much deeper; it serves to maintain the French genius itself, of which classical education is an integral part, ever strengthening the French genius at its original sources.*

In Germany, out of a population of forty-six millions in round numbers, there are twenty-eight thousand students distributed between the faculties of law, medicine, Catholic and Protestant theology, and finally of science and letters (the two latter combined in one called the Faculty of Philosophy, to remind us that the philosophical and universal side of science is of most importance). Thirty per cent. of this total study medicine, twenty per cent. law, twenty per cent. theology, fifteen per cent. letters, and fifteen per cent. science. All, *without exception*, have learned Latin, and even Greek. A uniform *Maturitätsprüfungen*, or certificate of examination, declaring the student's "ripeness," alone gives to young men access to any of the faculties. Now, to what students are Latin, and especially Greek, practically indispensable? To philologians and theologians, thirty-five per cent. of the whole; while students in law, medicine, and science, *i.e.* two-thirds of the whole, find no room for serious application of those subjects. For it is perfectly useless to learn Latin and Greek merely to grasp the meaning of a few scientific or medical terms, such as anæmia, typhus, cholera, odontalgia. Why, then, is the study of Greek and *à fortiori* of Latin retained in Germany? Because, although Germany is not of the Latin race, she is none the less, like every civilized race, a co-heir of the great classical tradition; and this tradition, in spite of her national and romantic literature, Germany does not wish to lose. She knows that in the German spirit, although to a less degree than in the French spirit, there still remains, blended with the influence of Christianity, a part of the spirit of classical antiquity. She feels compelled to carry the study of Latin and Greek further than we do, because she is not already Latinized by her own language and by centuries inspired by antiquity. She remembers that her national literature emerged but a century ago from barbarism, when Lessing, Herder, and Goethe "renewed on German soil the sentiment so long estranged from antiquity."* We know how familiar Goethe and Schiller were with the ancients. Need we recall Goethe's "Iphigenia," his "Roman Elegies," and the *Journal of Art and Antiquity* he founded; Schiller's translations of the Greek "Iphigenia" and of the "Phœnicians," and finally his "Gods of Greece"? Germany is not the country where a glorious tradition will be repudiated.†

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* The student should read the admirable exposition, by Mr. J. Churton Collins, of the influence of the ancient classics upon the development of English literature. *Vide* "The Study of English Literature" (Macmillan), 1891 (*Tr.*).

Nor is it so in England. From nineteen to twenty-four the young Englishman, at Oxford or Cambridge, under the old cloisters, amid the verdure of the country, reflects, reads, and writes, and lives in touch with the great writers of antiquity. If he is a good humanist he wins a scholarship, and then a fellowship, and has a secured income of £150 a year for a few years. Paul Bourget, in his notes on England, shows how deeply the classics have made their influence felt in English thought. The author of "Julius Cæsar" and "Coriolanus" learned what he knew of antiquity from Italy and France, from Boccaccio, Montaigne, and Amyot; Milton wrote two volumes of Latin verse—

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* Brunetière, "La Question de Latin."

† The Græco-Latin studies are further exaggerated by treating the dead languages as objects of *instruction* and knowledge, instead of as means of æsthetic and intellectual *education*.

"Elegies," and "Sylvæ;" Cowper wrote an elegy in Latin Alcaics; Byron wrote an imitation of the "Ars Poetica," which he preferred to his "Childe Harold." Bred in this classical atmosphere, Keats rapidly appropriated, though partly second-hand, the spirit of classical antiquity; his longest poem is devoted to Endymion; his most charming ode is on a Grecian urn on which were carved lovers and flute-players dancing. The art of the sculptor, which takes from time life and love and action, and in a measure places them in the immortality of pure form, inspired in Keats a poem sculptured in Greek form, giving the sentiment of the immovable in motion itself, and of the intellectual in the sensible.* Shelley, in his turn, is saturated with Plato and Sophocles. Tennyson's two masterpieces are "Tithonus" and "Ulysses." Finally, Swinburne's contributions to the "Tombeau de Gautier" were four odes, in English, French, Latin, and Greek. Utilitarian England, therefore, preserves religiously the cult of classic antiquity, at least in the education she gives to her ruling classes. If the Latin nations, in the education of their higher middle classes, wish to cast off not only Greek but Latin, they will be denying their ancestry, and by this, as it were, intellectual ingratitude, they will be preparing the way for the decadence of their national spirit.†

There is a second condition of French greatness which should be maintained, a condition that has made French a classical language, saturated with the genius of the ancients, an intellectual and *ipso facto* a universal language. It has often been remarked that when Greece extended her frontiers eastward, and by the conquests of Alexander made the world Hellenic, it was by taking its language with it. Greece remained even after the Turkish empire was founded, because she faithfully guarded and maintained her language. When the Greeks and Carthaginians were disputing the sovereignty of Sicily, it was the Greeks who won the day, in spite of numerical inferiority, because their idiom had been imposed upon the indigenous tribes. So far, France has had certain privileges because of her language. French, it has been said, a genuine legacy from the Romans, was the channel through which ancient civilization found its way into Europe. Not only is France the land of letters and art, the great centre of attraction for England, Italy, Spain, and Russia; not only has she more foreigners among her residents and more tourists passing through her territory than any other country, but her language, which has been international since the fifteenth century, is "the common idiom of the best society in every country." If a book is to be published, addressing not a limited public but readers of every race, it is written in French. Everywhere we find newspapers in French—in Rome, London, Constantinople, Germany, Servia, and Egypt. The civilized world has given French an official position in the curricula of their secondary schools and in their higher instruction. There is no liberal education into which it does not enter. But, for a certain number of years past, alarming symptoms have set in of competition in which French will with difficulty hold its own—especially the competition of English, which is spoken by a hundred millions of men, and German, which has become the language indispensable to men of science in every country. The Germans, too, recognize and appreciate the importance of a tongue which is spread far and wide by expansion, whether industrial and commercial or literary; and they therefore bestow jealous care in imposing and propagating their language wherever they can. French, on the other hand, after having spread all over Europe, is receding to our own frontiers — frontiers, too, which are more restricted. Let us beware. A philosopher* has justly remarked that the evolution of languages, their flow and ebb, follows, as a rule, the progress and regress of the genius of nations. As soon as French ceased to be the "organ of reason," we should see it recede further still, and with the decrease of its influence we should see decreasing the influence and the very security of our own country. Now, our language can only persist and become more widespread as long as it remains classical, and as long as it draws the breath of life from classical sources. We have, therefore, no right to abandon either a national system of education which has made our language literary, or the historical traditions our language has faithfully guarded for so long; that would be breaking with the glory and influence of France.

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* "Heard melodies are sweet, but those unheard
  Are sweeter; therefore, ye soft pipes, play on;
Not to the sensual ear, but, more endear'd,
  Pipe to the spirit ditties of no tone.
Fair youth, beneath the trees, thou canst not leave
  Thy song, nor ever can those trees be bare;
Bold Lover, never, never canst thou kiss,
Though winning near the goal—yet, do not grieve;
She cannot fade, though thou hast not thy bliss,
  For ever wilt thou love and she be fair!"

† *Vide* note, p. 112.

Another condition of our national greatness is our artistic sense and superiority of taste. In the last French Exhibition we showed considerable *savoir-faire* in everything referring to mechanics and science; we displayed both skill and ingenuity, but, on the whole, our men of science and our engineers showed the world nothing very new or very important. We owe our superiority to art, and our industry itself owes its perfection to the traditional taste of our artisans who are all more or less artists. The general organization and the architecture of the Exhibition was itself a work of art and, at the same time, a piece of mechanics. Now, is it supposed that the traditional classical training and the Latin basis of instruction for the ruling classes does not serve to maintain the taste for the beautiful and for lovely form, first in the enlightened classes who give orders for so many works of art, and then by inevitable contagion in the working classes, who are strangers to neither our literature nor our art? If this is a result of national heredity, is it not also a result of national education?

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* M. Lachelier.

If *impressionism* were to invade our literature and art, and if it were no longer opposed by the classical training of the middle classes, upon which primary instruction itself is modelled, we should see gradually vanishing those æsthetic qualities of judgment, good taste, accuracy, delicacy, and refinement which so far have persisted in our industries, and which alone have up to the present sustained us against foreign competition. Classical tradition, privileged because it is not only classical but national, because our literature is inspired by the ancients, is therefore the natural safeguard of our literary and artistic genius. Suppose that instead of language the only instrument of art were sculpture, and further assume that all the statues of antiquity were collected in a single museum; those who wished to be artists would be compelled, *nolens volens*, to imitate and study the masterpieces of Phidias and Praxiteles. Indirect intercourse through imitators is not enough; and if the objection be raised that the moderns, too, have produced masterpieces, the obvious retort is that they have accurately followed the school of the ancients, to which younger schools must always have recourse.

It has been stated that the arguments for Latin and Greek are of equal weight for Sanscrit. The Indian tale of Nala, it has been said, is a pearl of poetry. Must we therefore learn Sanscrit to read it and other Hindoo masterpieces? No; because Sanscrit is too far from us, much further from us than Latin or Greek, and it is not only too difficult but also of no use. So with Hebrew, to which we owe so much, but of which we are not heirs in the direct line. Besides, neither Sanscrit nor Hebrew have the classical qualities. Thanks to the leisure at the disposal of the free men of Græco-Roman antiquity, and thanks to the narrow limits of their country and, in general, of their life, and, last of all, thanks to the limited development of civilization, the ancients could find means of expression in language as well as in marble and stone, in perfect conformity to their ideas and sentiments; depths in their eyes not going beyond form, they were able to realize that perfect harmony which is the beautiful. Every one will agree that Greek and Roman literature is the most harmonious and finished of all literature, that in it we find the most intimate agreement of thought and sentiment with expression. Ancient languages, less abstract and less exhausted than ours, have the advantage of incessantly appealing to natural and healthy imagination, to natural and healthy sentiments. The poets of antiquity were accustomed to paint in a few words, and thus they bring before the youthful mind a whole series of scenes at once animated and familiar. Take any lines of Virgil, even those which have become more or less hackneyed—

"Et jam summa procul villarum culmina fumant
Majoresque cadunt altis de montibus umbræ . . .
. . . Hic candida populus antro
Imminet . . .
Pontum aspectabant flentes . . ."

and we must feel that lines like these, so simple in their form, are best calculated to awaken in youthful minds a taste and a sense for all the arts, from poetry and music to painting and architecture. A Latin verse is of itself, as it were, a small building, a self-sufficing and symmetrical structure; it is complete from foundation to roof. It is at the same time a picture with foreground and background. I am not alluding to the musical rhythm inherent in classical verses. May it not be said that a Virgilian verse—introducing the young to the common principles and common beauties of the different arts, to symmetry, eurythmy, structural elegance, accurate drawing, sober and natural colouring—has a virtue due to both the genius of the language and the genius of the poet? That is why the study of Latin verses is eminently adapted to develop taste in the young; that taste which, as we have just seen, is not useless to nations and races, even in industrial competition.

To study the ancients from translations is not enough. To grasp both the spirit and the letter needs direct contact with the original. Let us never lose hold of the principle that in education—especially in æsthetics—form is of capital importance; our youth should learn the art of giving forms to their ideas and sentiments, for all unformulated thought is incomplete, and no sentiment is complete but that which inspires first language, and then action. In art, depth and form are, as Flaubert says, "consubstantial." Lovely forms are already of themselves educative; they are like frames which are engraved on the mind, and surround ideas, sentiments, and actions, and increase their beauty. The child ultimately thinks, feels, and acts under the category of the beautiful as well as under those of the good and the true; the ugly, as well as the absurd and the shameful, gives it a shock. In a word, there is no elevated education for the young who wish their studies to be rounded and complete, without æsthetics—a complete æsthetic training—without the knowledge of, and direct intercourse with, the classics.

Have Greek and Latin, then, a mystical influence? Are the classics, then, a religion? Their mystical virtue, if thereby is understood an influence that is latent because it is profound and vital, springs from the invisible links by which we are, and have been for twenty centuries, connected with antiquity. Their virtue is perfectly natural, in no way supernatural, akin to that of heredity, of the race, of nationality. And for the literary and ruling classes, classical culture is indeed a religion, but a religion without dogmas and without a ritual, a religion which leaves the modern mind its liberty, while it connects it with the spirit of antiquity. Since history, physiology, and psychology exhibit our solidarity with the Latins, what utilitarian calculations can prevail against influences which come into play from within and not from without? If religion is daily losing its power, almost the only cult that can replace it is the cult of the beautiful, of literature, art, and philosophy; it is the disinterested love of what is great, the habit of thinking and acting for the community, and not only for ourselves—a habit which was considered as the greatest of the virtues by the ancients, because in those days all was centred in the city. The ideal of humanity, resulting from an anthropomorphic religion, was ever present to their minds. They lived in constant communion with the gods, and therefore they produced a host of heroes. That is also the reason why they produced so many masterpieces in art and literature, in which the grandeur and simplicity of the human ideal were deified.

Not only does Latin represent the current of antiquity blended as it later is with the stream of modern times, but it also represents the literature of Christianity. Now, it is needless to say that even freethinkers are always influenced by the Christian spirit; it is an integral part of our nationality. A large proportion of the population is still numbered among the "faithful;" they are represented by a clergy who have had a classical training, and whose influence is far from gone. Our ruling classes should be at least the equals of the clergy in culture.

One last condition of national greatness, rightly invoked by the partisans of a classical training, is that which makes of the cultured classes the depositaries and "natural guardians of what are called the public virtues." Now, literature and philosophy have little by little become almost the only means of communicating these virtues so essential to national greatness. At the same time that Græco-Roman religion was deifying humanity, it deified the "patria," which, being more limited in extent, was also more immediately present to the minds of all. The patriotism of the ancients is still a priceless training for our own youth. The *rôle* played by both civic and military virtues among the ancients was so important that they furnish to modern races an imperishable example. It is a commonplace to reproach antiquity with its narrow views of liberty, with its ignorance of the delights of representative government, with the rebellion against tyrants corresponding to modern resistance to lawful authority, with the continual sacrifice of the individual to the State, with its sumptuary laws, with the uniformity of its system of education, with the slavery of the many and the sovereignty of the few, with its pardoning of public crimes, if successful, and of private crimes if accompanied by public services. All that is true enough, and we cannot make it too familiar to the young. But the thesis of the partisans of the classics is also true, and the evolutionists should be the last to deny the educative value of the morality of the ancients. Gradation, in fact, is the fundamental law of the evolutionists; if ancient patriotism was more simple and more narrow than modern patriotism, that is an additional reason for familiarizing our youth with it before attempting to exhibit the more complex forms of our political life. They will thus be familiar with the historic evolution of the idea of the State, from the violent and limited idea of the Dorians, to the wider and more liberal view of the Athenians; from the exclusive attachment to the city among the Greeks and early Romans, to the gradual spread of cosmopolitanism in the time of Cæsar and his successors. Ancient patriotism, too, has a quality of fundamental importance in education—its heroic character. Our opponents can scarcely hope to suppress Greek and Roman history; why, then, should they object to direct intercourse with those authors who have immortalized so many noble figures? This direct intercourse, of which we have recognized the necessity from the standpoint of literature and art, has the further moral advantage of being better able to make the young alive to that epic and dramatic life, which, merely as an effect of perspective and distance, is none the less an ideal, preparatory to real life.* "Representative government" will be familiar to them quite soon enough, and we can only hope that children will at once understand the just and dignified side of the sentiment of contemporary liberty.

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* M. Fornelli's answer to the opponents of a classic training is an excellent one, being the mere enumeration of the following names, each recalling instances of dramatic simplicity: Miltiades, Aristides, and the other heroes of Marathon; Leonidas at Thermopylæ; Themistocles and the Athenians at Salamis; the Athenians and Spartans at Platæa; Thrasybulus; the Thebans who liberated Cadmus, and were invincible under Pelopidas and Epaminondas; then among the Romans, the first Brutus, Horatius Cocles, Mucius Scævola, and Clelius in the epic war against the Tarquins; the retreat of the people to the Mons Sacer, and the dramatic

The moderns have sounded depths of the human soul unknown to the ancients; charity, modesty, the chivalrous worship of woman, the higher forms of love, melancholy, the intense love of great nature herself, of the ocean and the mountains. In general there is more delicacy, complexity, and refinement in modern sentiments, and often, also, more depth; but from the pedagogic point of view, the most important qualities are those that are simple and strong—that is, to repeat what I said before, ancient heroism. The ancients were nearer the gods, *a diis recentes*, or shall I say, nearer nature? Whether the illusion be real or due to distance, they are to us, in a measure, sublime. "The Greeks," said Euripides, "walk in the light." The Athenians took as their emblems, besides the bird of Minerva with its eyes peering into the night, the busy bee and the grasshopper sacred to the muses, working and singing in the open air. Their tragic poets and philosophers try to reveal to men the lofty truths, "the mighty laws on feet sublime, daughters of the celestial æther."[*] It was on the shores of Ionia with Socrates and Plato that human thought first assumed conscious form. At the same time, in the presence of the great mystery of the world, it counts the possible words of the enigma, and of each it makes a metaphysical system. There, also, was born history, and even philosophical history, which aims at the discovery of causes and

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adventures of Coriolanus, Fabius, Cincinnatus, Virginia, Licinius Dentatus, Papirius, Camillus, Montius, Decius, the Romans at Caudine Forks, Fabricius, the blind Claudius, Curius Dentatus, Attilius Regulus, the Romans conquered by Hannibal, and again conquering in their turn, and then as masters of the world.

[*] νόμοι
Ὑψίποδες, οὐρανίαν δι' αἴθερα
Τεκνώθεντες.

laws. Art, poetry, eloquence, philosophy, history, science, "all we love comes from the same source."

The Romans, too, had a sovereign contempt for death, and a jealous worship of a country that was ever advancing, ever growing. To the natural laws that Greece adored, they gave the immutable and rigid forms of written laws. They have the majesty of reason. M. Brunetière has well said that the ancients—especially the Romans—were cosmopolitan, that they observed, so to speak, composed, and wrote "outside and above the categories of space and time." They drew the psychological outlines of "the universal man." And their psychology and ethics alike are "lay;" and this, continues M. Brunetière, will some day prevent their proscription or perhaps even make them compulsory. "Fanatics may be created by a Bossuet if misunderstood, or by a Voltaire if read aright; but neither Cicero nor Livy could make fanatics even if we wished them to." The Latin classics form a body of universal practical reason; the Greeks, by their very originality, exhibit a more individualistic character. Their reason is often a little on one side or the other of the real point; they have the intemperance and now and again the eccentricity of genius; they think less like men in general, and feel less like men in general.

After all, where was the first sign of unity in the human race? Rome, the Eternal City, was not merely the Pantheon of the gods of conquered races, it was a "microcosm of the intellect of all nations." We may look forward, with M. Fornelli, in the more or less distant future, to a wider, more organic, and more spiritual unity, in which the whole of humanity will be concentrated and represented. There are many embryonic organs in the life of each modern nation which point to this organization in the future, to the distant fusion of the soul of every nation into a single soul. But as long as this is not accomplished, our youth will not have at its disposal, as the *common* basis of a liberal education in all nations, a form of humanism, wider than the Roman, and adopted and increased by Christianity. Let me add that French humanism is a natural growth from this—or even the elevation of it to a still greater degree of universality. How, then, can our national literature, in its most intimate spirit, be understood, and more particularly, how can it be maintained, by ever widening its horizon, without at the same time making it lose its natural characteristics, if we are not constantly reviving the spirit of antiquity and the spirit of Christianity, combined with the original characteristics of our race? The individualism of the German and English literature makes them ill-adapted for educational purposes, and especially for the education of neo-Latins like the French; they are not "universally intelligible." Read Lessing, Schiller, Goethe, Uhland, and Heine, when they are not inspired by the classical spirit, and when they even surpass the old humanism; the inspirations of their genius, great as they are, are so stamped with the individual mark of the German consciousness that very often, as M. Fornelli says, we do not really grasp them or appreciate them in all their inmost ideality. The future will have to decide which will in the end prevail—"the content of the German consciousness which is only a great historic moment in life and Christian civilization," or the content of a consciousness which "will endeavour to surpass Christianity itself." M. Fornelli, in the latter quotation, seems to allude to the French, for it is obvious that since the Revolution, our moral and social philosophy is endeavouring to surpass even Christianity, and, in general, all positive religion. M. Fornelli thinks that a vast synthesis will in all probability prevail, a new humanism of the future generations, to which each national consciousness will contribute its own share—but divested of all individual character. However that may be, the part played by France in this fusion may be, and ought to be, a great one. The evolution of the French spirit has passed from Roman to Christian universality, and from that to a purely human universality; the time has not yet come to break through these concentric circles. By separating ourselves violently from our origins, we would be separating ourselves from the very principles of our spiritual life. The law of continuity applies to the national spirit and literature just as it applies to politics and to social economy. If it is of moment in the struggle for existence to have enough flexibility to adapt ourselves to new environments, it is equally important, as I have shown, to preserve the typical force and its essential and hereditary characteristics ; a single form, with the maximum of unity in the maximum of variety, assures to every being and to every nation a long life. The object of education is to maintain this form, to force all minds into the national mould, which, even if imperfect, has the advantage of offering an individuality, a solidity, and a unity in which different consciousnesses come into contact and multiply their power.

As the advice of foreigners in matters that concern us is always interesting, I may add that, according to M. Fornelli, "among the elements that have most of all contributed to the eminence of France in the world of literature, we must place her classical education with its constant bent to literature." And he adds that the French may venture to abandon this system without *immediate* danger—"the plasticity and the wealth of their language, the profoundly literary thought and taste of their nation, allow them to free themselves in a measure from the chaste restraint of the masters of classic art," whereas the Italians could not. In a measure, certainly ; but we must not abuse this permission, or we should very soon lose our acknowledged superiority.

We see that the State cannot rid itself of historical and philosophical considerations in organizing a system of instruction for the ruling classes. It is in vain for M. Raoul Frary to say that we can understand culture of anything but dead wood ; Latin literature is not dead wood ; it is one of the principal mother roots whose sap still mingles with that of the whole tree, and contributes to keep it ever green.

Not only is Latin national to us, but it is also the only pedagogic language having the characteristic of being international, for it is the common study of the enlightened classes in all great nations. If in these days *savants* have ceased to write letters from one country to another in Latin, it is none the less true that there is always this connecting link between civilized countries, that every really well-educated man, whether a man of letters or of science, to whatever country he belongs, has had a classical training. A great American could say that every civilized man has two countries, his own and France; so every well-educated man can say he has two languages, his own and Latin. Latin thus establishes as it were a kinship between nations. Replace it in the education of the higher classes by living languages according to the taste of each pupil, reduce classics to the minimum, restricting them to the few amateur antiquarians who will become more and more rare, and you will have a France not only severed from her national spirit, but from the modern spirit of other nations, who will have kept, in the case of their enlightened classes, classics and national culture side by side. We shall thus be quite outside universal agreement.

Latin has this advantage over Greek in having been a living language in literature and science almost to our own days. If in the study of antiquity and the origin of science or philosophy, Greek is everything and Latin of next to no value; on the other hand, Latin is everything in the study of the literary, scientific, and philosophical movement of the Middle Ages and of modern times; it was always the language of men of science, and in Latin they wrote their most important works. Only in our own times has the development of the national spirit driven out the custom of writing in Latin, and has raised each language to the honour of being the language of science. M. Cesca * goes so far as to hope that the progress of the same spirit of nationality, urging all nations to write in their own tongues, will provoke a reaction, and that Latin will eventually become once more the "language of the learned." And in fact, as long as the scientific movement was confined to a few nations, it might very well be expected that, in order to keep themselves in touch with the progress of science, men should know the principal modern languages; but already in these days, one has to know German, English, French, Italian, Russian, and Dutch. National universities are arising around us; each nation is anxious to be intellectually independent and does not wish to recognize the hegemony of another; each publishes the work of its scientific men in its own tongue; soon it will be impossible to keep in touch with foreign work and to follow the scientific movement, for it will be impossible to learn all foreign languages. Latin being already the universal instrument of literary and historical culture in secondary education throughout the civilized world, the question will perhaps arise as to the advisability of writing in, or at least translating into, Latin all books on science—at least as long as Volapük is not preferred!

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* "La Scuola Secondaria Unica."

This may be but a dream, yet if the experience of ages teaches us that the classics are *par excellence* the best means of literary and artistic culture, that, with philosophy, they are even the best means of communicating to the mind the disinterestedness and enthusiasm necessary to every great science, and necessary also to civic life in the ruling classes, the classics must be maintained in their integrity in all cases where position in life admits, and we must concede to no other training the same rank, honour, diplomas, and social privileges, if we are to avoid its falling into disrepute and its ultimate ruin. If only one succeeds in developing above the average the capacities of some five or six boys out of a class of fifty, this small *élite* will hand on the great tradition of letters, art, philosophy, scientific speculation, and far-sighted policy—a tradition which, as I have shown, is the very life of our race from the intellectual, moral, and civic standpoints. "But," some one will object, "what about the average boys?" My answer to that is :—when we are estimating the value of the classics, we should not discuss mere results alone; there is another point which has been unwisely neglected, and that is the influence of suggestion, of which in other cases contemporary philosophy has shown the importance. The average boy who has for eight or ten years been in daily contact with teachers who are inspired by lofty and disinterested motives in harmony with our national and international traditions; who has heard, even unwillingly, a series of (sometimes eloquent) lessons on noble subjects; who has read a certain number of pages in the masters of ancient literature in direct touch with antiquity; who has been through a complete and not a mutilated course of philosophy, transporting him to the very highest regions of thought; who has had as fellow-students distinguished and often superior boys; who has witnessed their efforts and their success; who has in a certain measure experienced the influence of the environment, of that mountain air which is saturated with the glories of the past;—that boy, mediocre though he be, will not in the long run be in the same frame of mind as a boy who has been hard at work at nothing but science, French, and modern languages. Is there no unconscious suggestion in the fellowship with highly trained minds? Does not the teacher of a picked set of boys exercise over an idle lad some unconscious influence? If the master has the love for the beautiful, a cultured taste in ancient art and modern science, a philosophical and patriotic zeal—in a word, enthusiasm for all noble ideas, is it possible that even his worst pupils should not, unknown to themselves, experience a healthy stimulus? They will not perhaps know the date of the capture of Constantinople or of the battle of Poitiers; they will be quite at sea as to the Investiture dispute or the Wars of the Roses; they will not know whether Salzburg is in Austria or Germany, or if Sens was in the old province of Champagne or Burgundy; they will be unable to extract a square root or to describe a pneumatic machine; any boy from the technical, or even from the primary, schools will be able to teach them something on these points and many others; but, on the other hand, they will have acquired by the influence and suggestion of their environment a certain elevation of mind, a classical bias, a more or less latent taste, a sum-total of faculties which are at once human and national, and which are only developed in contact with noble literatures and philosophy.

If, on leaving the lyceum, the boys bathed in the waters of Lethe and forgot all the Greek and Latin they knew, nothing being left but the cerebral development and tendencies acquired, their forgetfulness would by no means prove the inutility of classical studies. In fact, the matter of a language gradually fades from the memory, but the effect of mental training is persistent—a truism too often forgotten by our pedagogic iconoclasts. In a country walk, the most important thing is not so much the point reached, although it is good to get to a point whence one may obtain a lovely view, as the ground covered, the air breathed, the mind and body refreshed, and the health and strength acquired by exercise. Take a lad prepared for matriculation in a year by the most expeditious means, and then emerging, as it were, from a hothouse, this short-sighted and mechanical youth will be in no way the equal of what are disdainfully called the "dry husks" of our lyceums, who, even if they are ignorant, have nevertheless gained something from contact with a higher order of mind. For my part, I have never found a lad who has not absorbed from classical culture some drop, however small, of intellectual sap. No doubt the ruling classes should be given a more positive training than Latin affords, as far as public morals, social economy, law, and politics are concerned; but it is of paramount importance to give them, with what is essential in modern subjects, a culture that is disinterested and really ancient and classical. Moral and civic education is already neglected, and what will happen when literary and classical education itself is gone and there is only scientific instruction left?—instruction, I say advisedly, for I repeat that the sciences in themselves do not constitute an education, whereas literature and philosophy do.

It is in vain for Spencer to urge that what occupies the leisure part of life should occupy the leisure part of education;* for I cannot admit that the humanities only represent the hours of leisure in life. Are not our manhood and citizenship of more moment than our profession? Should not the engineer be a man all day—a man civilized, with a love for the good and for the beautiful, a man intellectually cultivated and morally strong, capable of something beyond professional routine? What Spencer calls the leisure part of human life is really its most essential side. The object of literary culture is not to enable you to read Horace and Virgil in your idle moments, but to transform and to beautify your inner nature; its object is to take you along the path which has been trodden by past generations, by your own country, and which other nations in their turn will tread. After that, whether you do or do not read Virgil is of little import; even in bridge-building there will still remain a sense of elegance and beauty which should not be neglected from the utilitarian, the moral, or the national points of view. After all, even in private life, the first place must be reserved for the disinterested, the noble, and the beautiful. "Engage in scientific pursuits," says one of our poets, "but do not absolutely neglect literature; keep a place for it in your minds; keep for it a green nook, to use the quaint English expression, a little spot where the flowers of the imagination may bloom, the flowers that perfume and beautify our lives."†

Is the reconciliation of a classical training with the scientific requirements of the age an impossibility? I think not. But for the solution of this problem, to which I shall presently come, it is clear that we must simplify our teaching in ancient literature, and keep to what is essential.

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* Spencer, p. 39.

† Coppée.

Among the dead languages there is one, viz. Greek, the complete study of which, pursued to the end, is not necessary to *all* boys receiving a liberal education, at least to all those who are looking forward to a scientific career. The French are not neo-Greeks, but neo-Latins, and French literature was only inspired by Greek through the medium of Latin. We might even, strictly speaking, conceive of the teaching of Latin without Greek; such a system has long existed here, and in the brightest days of our literature; it obtains in the first-class German *Realschule* (wrongly compared to our special or technical schools, although equivalent to the science side of our schools), and it also obtains in other countries. The æsthetic, philological, and philosophical superiority of Greek compared with Latin is not without a certain inferiority from the pedagogic point of view. Greek is a complicated language, very rich, subtle, free, and flexible, no less romantic than classic, and with forms that are unfixed and fluctuating—a marvellous language, no doubt, but a language whose marvels are only revealed after profound study such as we can scarcely expect the whole of our sixty thousand students to bestow upon it. We might therefore sacrifice Greek—without veiling the face with Agamemnon when he slew Iphigenia—in the last two years of school-life, in the case of lads who are destined for a scientific and not a literary career. Although I am somewhat of a Hellenist myself, I cannot conceal from myself that Greek is, after all, a special subject, and a very difficult subject. But Latin should be retained to the end in all secondary classical education, for it is connected with us by links which cannot be broken, and which, moreover, are ties between us and other nations. I admit therefore that Greek in the case of some boys might be replaced in the upper classes of a school by science or modern languages, and by thus dispensing with Greek in those classes, boys destined for a scientific profession would gain four or five hours a week. The ideas of Greek acquired in the classes below the two upper classes, would be more than sufficient for those careers, into which the student would, moreover, enter with a complete French (or English), Latin, and philosophical culture. This solution would be far better than the total abolition of Latin and Greek with which we are now threatened.

Thus, in virtue of the principles of continuity and gradation, I strongly advocate the retention of the Latin humanities as an essential element of the French—or, as I should say, the universal—humanities of the present day; in virtue of the principle of progress, which, owing to the increase of subjects of knowledge, necessitates some simplifications in the intensity of culture, I eliminate Greek from the curriculum of the last two years of school-life; but from all boys I should require a sound knowledge of Latin, of general science, and of philosophy. Without making a breach in the continuity of the historical chain, I let one link hang more loosely at the end of school-life, a link which has increased its distance from us as we progressed, just as Hebrew and Sanscrit are in these days too far off to be taken into consideration. That part of the Greek language and literature which can be assimilated, having passed into Latin and its literature, the study of which on the whole is easy, a sound training in Latin, with the elements of Greek, will be enough to keep the average mind in contact with Græco-Roman antiquity. Besides, in most cases, Greek is already merely nominal. It would be far better if a sounder knowledge of Greek were required from boys taking up literature, and that it should be abridged or simplified to the advantage of science, at any rate in the last two years at school. But, as I said before, this reasoning does not apply to Latin, because Greek is to us a dead language, while Latin is still living in the French language and literature, and in the traditions and even in the spirit of France; besides, it is the common basis of classical education in all countries, and thus plays an additional *rôle* as a mark of international union.

And we must impress upon our boys the historical value and necessity of the Latin we compel them to learn. Once boys understand it, they can make others understand it in their turn. Why is classical education flourishing, as it does, in Germany ? Because the opinion of the enlightened classes is in its favour ; because the universities pitilessly close their doors to all who have not received a sound training in Latin ; because the boys themselves can give good reasons for their study of antiquity. In France, where opinion is perhaps more divided than elsewhere, because our mobility in politics tends to become evident in the province of education, we do not teach our youth the object of a classical training ; that is to say, that to the most "reasoning" youth in the world we give no reason for what we compel them to do. Where is there a master who, when teaching Latin and Greek, rises to general considerations on our intimate connection with antiquity, on the eminently national and even patriotic character of the classics, on the necessity of our not falling below foreign nations, and of maintaining our world-wide renown as a literary and artistic people ? Can it be supposed that our youth would continue to consider Latin as an incomprehensible drudgery, if they were shown its advantages from the point of view not merely of their own intellectual progress, but of the great literary, æsthetic, and scientific interests of France ? Recently, on the attempt to give physical exercises a more prominent position in the schools, appeal was made to patriotic sentiments ; at once our youth was responsive, and eagerly began, as required, to enter into *games*. So if we appeal to a boy in the name of his native land to inspire him with an ardour for work, he will work. But we do not ; the boy who enters the lyceum does not know why he goes to school, unless he fancies that he has to get the leaving certificate that will be of use to him in this or that profession. We put a Latin grammar in his hands. Why ? He is set Latin exercises and Latin prose. Why ? He is made to learn Greek. Why ? He often learns a living language, as often as not without knowing why it has been chosen in preference to any other. Many choose English because they have heard it is the easiest. No one enlightens them or their parents when the time for choosing comes. Everything is left to chance or routine; everything is done because others do it; as a great mathematician once said *à propos* of algebraical methods, "Go on, and faith will come in time."* Even the very teacher is often quite ignorant of the true reason for teaching a subject. He teaches grammar because it is his subject, and Latin and Greek literature for the same reason; nor does he think any other reason necessary. He uses the same methods that were used in his own case—that is what his pedagogy comes to. Is it surprising that, for eight or nine years, most boys are in the dark as to what is wanted of them, as to the object of this "hard labour" in grammar or ancient literature? Is it surprising that, on leaving the lyceum, they are unconscious of the advantage that has accrued from their training, and that they swell the number of the ungrateful who are turning and rending the hand that fed them? In a word, our classical education has no ruling ideas; it lives or vegetates without knowing the reason of its existence; it is unconscious. It is reduced like the hero in the story to appeal to custom and usage—"Their laws have made me lord and master of this house."† It is incapable of explaining custom and usage, and that in a country where it is more impossible than anywhere else in the world to maintain a custom, a tradition, or a law, without giving valid reasons for so doing. Again, the most peremptory reasons are often powerless to protect what exists against our craze for change. It is therefore essential that henceforth classical education should be conscious of its moral and national *rôle*, and it is equally essential that this consciousness should be communicated to our youth. For that purpose an organization is indispensable, which will place before all a definite end, and co-ordinate means with respect to that end. I shall endeavour, after a criticism of the "modern humanities," to point out the ruling ideas which seem necessary to the reform of the ancient humanities.

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* *Vide* Professor Chrystal, in the preface to vol. ii. of his "Algebra:" "Every mathematical book that is worth anything must be read 'backwards and forwards.' If I may use the expression, I would modify Lagrange's advice a little and say, 'Go on, but often return to strengthen your faith.' When you come on a hard or dreary passage, pass it over, and come back to it after you have seen its importance, or found the need for it further on" (*Tr.*).

† La Fontaine's Fables: "Le chat, la belette, et le jeune lapin."

"Jean lapin allègue la coutume et l'usage:
'Ce sont,' dit-il, 'leurs lois qui m'ont de ce logis
Rendu maître et seigneur,'" etc. (*Tr.*).

To sum up—the classics, which are supposed to be "ancient," should be conceived as national, aiming at the maintenance of the national spirit, the national language, the national taste, and finally the national influence. Better organization is all that is needed to make them—with that philosophy which is their indispensable complement—a really moral and social training, more necessary in these days of democratic nations than heretofore. It was said in a full *Reichstadt*, *à propos* of the decrease of the population of France, "France is going to the dogs." If France not only is ceasing to materially people the world, but also is ceasing to spread far and wide her works of art, her books, her language, her exquisite products and her good taste, then, and then especially, must it be confessed that "France is going to the dogs." Not only is there in classical literature and philosophy an ideal fatherland which must not be lost from view, but there is also in them a real fatherland, a real France, which is ever present therein, to know and to love, to make known and to make loved.

BOOK IV.

A "MODERN" EDUCATION FROM THE NATIONAL STANDPOINT.

SECONDARY education is nowadays affected by a kind of antinomy, which, at first sight, seems insoluble. On the one hand, the more complex and varied the national life becomes, the more it needs a system of education which will maintain its intellectual and moral unity, and also develop public spirit. From this point of view, secondary education should be unified. On the other hand, the diversity of subjects of knowledge and of their professional applications goes on increasing; we must therefore give up trying to teach everybody everything. From the second point of view, then, a certain variety in accessory subjects seems indispensable. The reconciliation of this variety with unity is the problem of the day, a problem to which recent reforms at the expense of philosophical training afford no satisfactory solution. This arises from an inability to determine either the fundamental or the accessory part in secondary education because of the lack of a true criterion, which lies, in my opinion, in the distinction between the purely instructive and purely educative subjects which are necessary to the maintenance of the national spirit.

In addition to this, there is a tendency not only to claim variety in education—a complete and really classical instruction for some, and below that, a more practical instruction for others—but they go so far as to claim the final equality of these varieties, with the same weight attached to each at the end of the school course. There is, as it were, a coalition to clothe "special" instruction with the classical toga, and to make it the equal of a classical training under the name of *enseignement français* or "modern humanities." *

The attitude of the partisans of "modern humanities" to the "ancient humanities" is very ambiguous. Some wish to destroy the latter, others to preserve them; and, strange to say, by the same means! When M. Frary plays the advocate of French and modern languages, we are well aware of the thought that is passing through his mind—"the latter will kill the former." But there are others, on the contrary, who wish to sustain the study of the classics (as some one puts it—like the rope that sustains the man, and strangles him). They think that classics will become the peculiar privilege of "those who have a real taste for them." Even men like MM. Gréard, Boissier, and many others, would like to see the classical lyceums reduced to twelve or fifteen, so as to create an *élite de délicats*.

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* For a sketch of the steps by which the way was paved for M. Duruy's scheme of "*enseignement spécial*," vide *Journal of Education*, March, 1891. M. Duruy, following the lines laid down by Cousin and others, and keeping in view the commercial, agricultural, and industrial professions, created a system which was not merely parallel to but presently a formidable rival of the old classical system. The new system was only partially successful, partly because it only solved one part of the problem, and partly because, owing to the instinctive tendency of the French administration to uniformity, the organization of "special" instruction became more and more akin to that of the higher primary instruction; losing its secondary character, and becoming merely that of, say, our higher grade schools. The students at the higher primary schools eventually were able to obtain the same diplomas as those in the special schools, and after some years the teaching staff of the latter schools was actually furnished from the normal school supplying the former (École Normale de la rue d'Ulm), and, as a natural result, the "special" normal school at Cluny collapsed. The reformers who receive in this volume such rough handling from M. Fouillée, propose a new scheme of purely French humanities, symmetrical with and on most points equivalent to the old classical system (*Tr.*).

In reality, the more or less conscious aim of the partisans of modern humanities is either the abolition of the ancient humanities or their gradual diminution and restriction to a smaller and smaller group of individuals, who will be consoled for their isolation by the flattering name of *élite*. This aim is the exact opposite of that pursued in Germany, England, and Italy, where all are anxious, as far as possible, to re-establish the unity of a truly liberal education, while an education of inferior rank and of shorter duration is left for those who have neither the time nor the means for receiving a complete education. Thus we are tending in France to level down in our education, whereas in other countries they are tending to an hierarchic co-ordination. Here is food both for reflection and for anxiety. Is France right in an increasing division, parcelling out, and disorganization of her really liberal education, for the purpose of introducing into it a hitherto unknown utilitarianism? The problem is of genuine national and international interest. I shall attempt to show that the solution is as follows :—

1. To maintain the unity of classical instruction, while introducing into it a certain variety in the way of accessory subjects.

2. To boldly organize an intermediate degree of instruction between the primary and classical, not, however, equalizing the new system with either of the others lest we should compromise both.

3. To boldly organize a system of professional and technical education such as is wanting in France at the present moment.

CHAPTER I.

UNITY IN SECONDARY EDUCATION.

THE bifurcation of literature and science under the Empire * has been severely criticised, but we are now preparing a further bifurcation, more premature, more radical, and more irremediable, into a classical and a modern education. Now, we cannot without the gravest inconvenience establish two different types of instruction, and, declaring them equivalent, give them equivalent sanctions. One will obviously tend to stifle the other. Let us, however, examine the reasons advanced for this division of secondary instruction into two distinct and assumedly equal types.

These reasons, when systematized, reduce to the four following: to adapt secondary instruction either to the moderate capacity or to slender purses, or to variety of aptitudes, or, finally, to variety of theoretical and professional subjects. But adaptation might be effected in two ways, either by a diversity of hierarchic degrees in instruction, or by a diversity of types assumed to be equal. Instead of the former solution, which would be logical, they propose the latter, which is self-contradictory. From the inequalities in the premisses they imagine that they can deduce an equality. In fact, if the first reason is selected, viz. the adaptation of instruction to the more moderate intellects, do not profess to organize a modern training which you fancy will be equivalent to a training in classics, and which will be awarded the same diploma. If the "modern humanities" are really more within the grasp of a moderate intellect, by what miracle can the final results be "equivalent"? And if the modern humanities are adapted to slender purses because the course is shorter, how, again, can the thesis of final equivalence be maintained?

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* The division of boys after a certain age into two groups—those who were to receive a sound classical training, and those who required a "special" instruction, mainly in science (*Tr.*).

The third reason for the division of secondary instruction into two equal types is diversity of aptitudes. But this reason, although more specious than the others, is of no practical or theoretical value as far as a complete and liberal education is concerned. It was urged in the old days for the bifurcation of literature and science; now, literary aptitude, so far from diminishing the necessity for a scientific training, theoretically increases it; scientific aptitude, so far from diminishing the necessity of a literary training, makes it more urgent. This theory, therefore, is self-destructive. Take a child with more imagination than reasoning power. He must, you say, take up literature and not science. I say, on the contrary, that the aptitude he lacks must be developed in him, and to re-establish equilibrium, he should study the general principles of mathematics and physics, as well as of literature. We must not turn out men of letters without the scientific spirit, nor must we train *savants* without the literary sense, incapable of clearly and elegantly expressing their own thoughts. If a boy is unsuited for a really classical education, we must find him a place in the "special" schools or elsewhere, but we must not aim at placing him on a level with the others. The last and most important reason for the creation of two distinct types of secondary instruction is the increasing diversity of subjects and their applications. But no one seems to recognize that the exact opposite would be the logical inference. Unity—I do not mean uniformity—becomes the more necessary in the basis of education, as subjects become more numerous and varied. The true liberal education is general, disinterested, human, and civic; therefore, the more specialities are multiplied, the more should classical instruction, *for those who can afford it*, be concentrated on the common basis of the specialities themselves—allowing, of course, for varieties in detail. Besides, it is a mere prejudice to suppose that the future doctor should receive at school an education so different from that which is necessary for the future magistrate or teacher. If we look closely at the subjects which are specially necessary *after leaving school* for this or that profession, we shall see that either there are no such subjects, or that they are quite of secondary importance, and merely require a few alterations in the science course of the curriculum, or finally, that they should only be acquired at a later period by direct and special preparation. Every division of classical education into really distinct sections is premature specialization; now, all premature specialization is dangerous, and should not be admitted into a liberal system of education. The saying is true that "a given individual is never one, but several individuals." Some children first resemble the father, and then the mother, and thus successively represent "a series of types distinct both morally and physically." We cannot therefore flatter ourselves that we can lay hold of the man in his final aspect either in the child or even in the youth; "we can never therefore foresee all the possibilities in a character, all the aptitudes it will develop. Hence the danger of all education which prejudges too hastily the tendencies of the child. The only object of instruction should be to awaken aptitudes, and never to respond to aptitudes supposed to exist. Without this, it is a mutilation from which a whole life may suffer. Once again, it is not a fixed and crystallized individual that the educator has to deal with; it is the shifting series of individuals, a *family* in the moral sense of the word, as well as in the sense in which it is taken in natural history." * The division into "Latin classical" and "French classical" instruction will oblige lads on entering school-life to make a choice with regard to which they have not the necessary information, and which, if unfortunate, will work irreparable mischief. Such a boy will say, "I want to be a doctor," and later on will discover that he wants to be an engineer; "I want to be a great merchant or a large farmer," and will eventually prefer the law. What is more difficult for a young man than the choice of a profession?* The results of an unfortunate choice are betrayed either by discouragement or by sterile effort. Inferiority in every career lowers the quality and the market value; and thus ensues a disastrous competition with the talents and aptitudes which have found their true bent; society is therefore as interested as the individual in ensuring that each of its members should use his true faculties. If we think of the waste of productive force and of the frequently fatal consequences of a lack of discernment in the choice of a profession, it will be recognized that no question is more worthy of profound consideration, and that any solution would be immature when circumstances do not require immediate choice. But few children evince very early for a profession a preference which is afterwards justified; in most cases they are guided by caprice, by momentary enthusiasm, or by a friend's example; or they remain in uncertainty, and then give in to their parents' wishes, which are governed by considerations of opportunity, and very often the parents are as little enlightened as their children. We have all known cases of men taking up a profession for which they have no aptitude.

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* Guyau, "Education and Heredity," pp. 248, 249.

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* I know very intimately a man whose studies were all arranged with a view to one profession, and who in his last year chose another—teaching. Even as a teacher, he began with a class in rhetoric, and prepared pupils for examinations in literature. Then, when the examinations in philosophy were re-established, he changed again, and this time he thought he had really found his *forte*. Later on, his work in Greek, with the examinations in view, enabled him to "Platonize" and "Socratize" as he pleased. Why should we wish to confine young people to science, to classics, or to "French classical instruction"? No one can foresee the future.

This is because, as far as the choice of a profession is concerned, humanity is as yet unable to avail itself of any but the most childish processes of selection.* Secondary instruction should therefore be organized so as to develop all the faculties which will be equally indispensable to the engineer, the doctor, the banker, the lawyer, or the farmer. After a sound fundamental training in literature, science, and philosophy, we can choose a profession, and our choice will be an enlightened choice. And if our general knowledge is sound, the more technical subjects can then be readily mastered.

As a safeguard of national unity, our classical instruction must be *unified* and animated by *one* spirit. In the two last years of school-life it only admits of a few "equivalents"—to which I shall come later on—in quite secondary points and in details; and here again these equivalents must be real, rigorously laid down, and rigorously limited. They will have a value not so much qualitative as quantitative, *i.e.* they will bear upon the greater or smaller amount of particular instruction and particular subjects to be acquired, and not upon the studies which, from the standpoint of individual *education* and of national progress, are characteristic of secondary instruction.

Now, another question arises. What should be the extent of a classical and really liberal education with respect to the whole population of a country? *i.e.* for how many individuals should it be provided? Generally speaking, they are those who by their rank or profession will be among the governing classes. Now, this class varies with the country and the form of government. It is evidently larger in democracies, where the direction of the national movement is no longer with the nobility, but with the rich and leisured middle classes. In France, therefore, secondary education should be provided for all those who have time and money to enjoy a classical training. Of course, a certain average capacity will still persist, but absolute incapacity is extremely rare.

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* *Vide*, on this point, M. H. Etienne, "Du Discernement dans le choix des professions."

Those who, contrary to this principle, wish to restrict a liberal education to a small minority, are pleading the interests either of the classical training itself, or of the industrial, agricultural, and commercial professions.

With regard to the interests of classical education and the true literary or scientific "callings," it is in my opinion a complete misconception to restrict a classical training to a smaller and smaller minority, under the pretence of fostering their interests and that of a classical training, and leaving the majority to utilitarian pursuits. What "calling" could hold its ground in the face of a general lowering of standards, of State indifference, of the increasing rarity of classical lyceums, or of the increasing facilities in every lyceum for leaving off Latin, Greek, and philosophy? Many would be called and few chosen. Under the pretence of artificially forming an *élite*, of making a selection, natural development would be checked. Ninety-nine hundredths of our boys (except in so far as ecclesiastical establishments might fill the gap) would be deprived of schools inciting to the really literary, philosophical, and even scientific professions, for the scientific "calling" almost always begins with being literary and classical.* Selection only comes into operation when there is a wide field and vast numbers; under the pretence of diminishing the so-called "dry husks" of classical instruction, the ripe fruit will be checked in its growth; in fact, it is just as if we wished to keep down the number of trees in a forest, because, forsooth, many flowers and fruits fall to the ground before they are ripe. Is it not by repeated and more or less fruitful attempts that Nature succeeds in her masterpieces? This scientific law is misunderstood by all those who wish to restrict a liberal education, under the pretext of its being to the advantage of an *élite*. The true method consists in, not mutilating and lowering the status of certain subjects, but in pruning the lower branches of the tree, in lopping off all historical, geographical, pseudo-scientific, and pseudo-literary rubbish, —everything that is mere erudition, mere matter of memory, mere detail, and specializing.

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* In the communal schools half the boys are already receiving this "special" instruction; and the proportion in the lyceums is ten thousand out of forty-four thousand. M. Boissier is of opinion that even this proportion is too small, and would have it reversed. "Ten thousand boys would be enough to provide for the liberal professions." But is the only object of a liberal education to be provision for the liberal *professions?* Does it not serve to develop a liberal *spirit,* which is equally if not more necessary in the professions of industry, agriculture, and commerce, than in functions more particularly called liberal? Is it not, as I have just pointed out, our middle classes that, in their capacity as the governing class, should be raised above an exclusive utilitarianism and realism? It is also proposed to establish the "special" or "French" system in all the communal schools. Now, "if we start," says M. Bréal, "from the men who are a credit to their country in science, letters, politics, etc., we shall find out that at least one-half were educated in the communal schools."

The organizers of the association promoting the reform of secondary education reproach a classical training "with turning young Frenchmen from industrial pursuits, and with attracting them in too large a proportion to the public service, or to professions already overstocked;" with creating "too many beggars and too many of the discontented and unclassed." Nowadays it is fashionable to inveigh against the unclassed, who, as a senator recently said, might have made good manufacturers or merchants. But is it from classical scholars that the "unclassed" are to be feared? It is not from the "unclassed" middle classes that social dangers will arise, but rather from the "unclassed" artisans and labourers, whose numbers will be

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There is also a practical objection to the proposed reform: youths who have literary tendencies, or who wish to devote themselves to a liberal career, will no longer have schools at hand where they can receive a real classical training. Numbers of careers will be checked if boys have to go to Paris, Lyons, or Bordeaux for a classical training. I know numbers of eminent men who, under the proposed *régime*, would have been quite unable to reach the high rank they have attained in the teaching professions, in literature, or in modern philosophy. The only institutions likely to profit by the reform are the ecclesiastical schools.

increased as the system of "French instruction" is popularized. A few briefless barristers or schoolmasters out of work do not constitute a peril to the State. If six thousand young girls are annually candidates for forty-five places as mistresses, is that the fault of Latin? is it the fault of a sound classical training? Unclassing is due to the exaggerated importance attached to science in all stages of instruction. The predominance of science, of modern languages, and of the mother tongue means the predominance of memoriter work and consequent over-pressure; at the same time, it encourages all persons of moderate abilities, for they say, "I shall soon know botany, anatomy, geography, history, French, and even English or German; it is only a matter of time and patience!" The more the quantity of knowledge to be acquired increases in the various programmes, under the pretence of eliminating a certain number of competitors, the more is the crowd of competitors encouraged whose only hope is to learn by heart by a fixed date, chemical nomenclature, dates of battles in French history, all the important towns in the United States, with their population, industries, and commerce, etc. Hence, the substitution of a passive storing up of knowledge for active methods and personal exertion, far from bringing about the selection in view, is bound to issue in an ever-increasing chaos of pretension and unjustified ambition.*

The way to get rid of these numerous and notorious mediocrities is not to manufacture a syllabus suited to their capacities, but to require from them the impossible, *i.e.* really personal mental exertion, and to abolish scientific, historical, and geographical summarizing; mere memory work, and the practical and mechanical exercises in modern languages, which the most ordinary student, if driven hard enough by his master, can eventually do indifferently well. Place all students of moderate capacity under a *régime* of active method, of sound composition in Latin and their mother tongue, of accurate and literary translation, and they will very soon have had quite enough of it. It is only natural that the longing to do what one is not adapted for should not be of long duration; with every effort much above the average the desire will grow weaker; at most only regret will be felt, and even then we may safely say that the incapacity was not absolute. If during nine years' school-life, daily work and effort in thinking and writing are necessary for self-knowledge, and for seeing clearly for one's self instead of asking this one or that one for information—well! no myopic or incapable student will persist so long; and the rising tide of candidates for the final examinations will soon be on the ebb. In class, as long as it is only a question of listening to a master for three quarters of an hour, of taking a few notes in history and geography, of sitting out an experiment in physics, of repeating the usual number of German or English words, all the pupils seem equally satisfied; this is the regular routine of the passive method; but when the days of school-life are spent at French, Latin, and philosophy, all is different. The boys towards the top of the class are excited and animated; this is the important side of school-life to them. As for the others, their faces are long, yawning and *ennui* are their lot; they would give a good deal to be well out of the lyceum. When we are trying to make these empty heads think for themselves, they are generally dreaming of the day they will leave school. Therefore it is to be desired that, whatever happens, the only work required from them should be the only profitable work—personal work, instead of practising, as we do, on a large scale, scientific, historical, geographical, and linguistic psittacism. This would be the surest way of making a whole nation intelligent from the top to the bottom of the ladder, and of seeing that each individual is placed in the category which is assigned him by his mental capacity.

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* The real reason so many young men have of recent years taken the baccalauréat is that thereby they get off with voluntary service in the army for one year. Since this was possible, large numbers of communal schools have raised the general standard in order to be able to prepare for this examination, and large numbers of young men have gone through the course prescribed. With more intelligence on the part of the authorities, more advantage might be taken of this stimulus.

The association for the reform of secondary education puts in the front rank of its programme those professions which make the "material prosperity of a nation," but there is no mention of that intellectual and moral prosperity, or of that literary and scientific greatness, without which, indeed, no nation can be either powerful or influential, and without which even its industries cannot exist and prosper for long. They are evidently inspired in this programme by M. Frary's economic doctrine. He divides the professions into the productive and unproductive, and then classes among the latter magistrates, teachers, writers, doctors, and artists. These men "add nothing to the wealth of the country." So Hugo, Pasteur, Claude Bernard, Trousseau, and Nélaton are unproductive and "parasites"! Those who build railways are productive, but the inventors of railroads are unproductive. So the confessed aim of education is to be material and economic utility—in a word, the production of wealth. Well! even from this false and narrow point of view the theory is untenable, for the very professions stamped as "sterile" are precisely those which contribute most to the scientific, industrial, and commercial supremacy of a nation. Germany, which they give us as a model, is a country of professors, of *savants*, of men of erudition, of writers, etc. To suppose that a nation can prosper without the movement of lofty scientific and literary speculation, is to forget the most elementary truths of history and political economy.*

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* In 1880 there was an attempt to introduce three cycles into classical instruction—primary, intermediate, and higher secondary instruction—each stage to be complete in itself. So, to encourage parents to send their children to the lyceums, they gave them the option of withdrawing them at the end of every three years, always with a "complete instruction of its kind." Nowadays this association trumpets a similar system, further aggravated by bifurcation. First cycle: French instruction, called

But does this imply that no attention should be paid to the manufacturing, agricultural, and commercial professions? No; but young men destined for these professions may be divided into two categories: First, those who are well off and able to look forward to the higher lines of manufacturing or commercial life, in which, I repeat, the liberal spirit is every whit as necessary as in the acknowledged "liberal" professions. Young people in this category may and ought to receive a complete and classical training. In what way can it be injurious to them? Because it does not give a sufficiently prominent position to science? But we clearly understand that a good liberal education will require from every pupil a sound knowledge of mathematics and physics; for all other sciences the choice is left between the various applied sciences. Is it not enough to approach technical subjects when the whole time is free? The future head of a sugar-refinery or of a great dyeing business will have plenty of time for his chemistry. The future head of a manufactory will have time to pursue the study of

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secondary, but really primary, with the addition of modern languages, but no Latin or Greek. Second cycle: about the age of twelve or thirteen a solemn decision is taken like that of Hercules between the two ways. But three ways are offered: classics for those who have the courage to devote themselves to them and wish to pursue that study for some years; modern humanities; and finally scientific humanities, into which the mass of the students will throng. In other words, three distinct sections; or, strictly speaking, more than three, for they tell us that higher secondary education "would be ramified according to requirements and resources" into "several branches preparatory for the faculties, into great literary or scientific schools, and into the higher schools of commerce and agriculture." This would be specialization with a vengeance, from fourteen years of age onwards, that is to say, M. Fortoul's bifurcation raised to I do not know what power, superadded to the cycles of 1880. And then they conclude as follows: "This *community* of education would be the safeguard of the *unity* of society!"

In fact, we are threatened with the progressive parcelling out of classical instruction, and the progressive elevation of utilitarian to the rank of liberal instruction. It follows that, on the one hand, classics will be lowered, and, on the other hand, no really professional and practical system will be organized.

mechanics.* And how can we at the lyceum enter into the subject of dyeing or weaving? We can only give a sound general instruction, not merely scientific, but literary and philosophical. If means do not permit, a student will simply refuse this training. And even in the case of those yonng men whose means are limited, and who have to go out early into life, a sound general training is still necessary, although not so extended in scope, requiring fewer years for completion, and in fact *inferior* to the other. This want is filled by the German *Realschule* to which the "special" instruction in France should correspond.†

The programme of modern humanities is a tissue of contradictions. They say there are too many humanists, and yet they wish to create new humanities for the majority. There are too many applicants for posts in the public service, and yet they wish to increase the numbers of the throng by manufacturing humanities at "contract prices." There are too many "bachelors," and yet they are going to create a fresh *baccalauréat* of French classical instruction—simply to humour the vanity of parents and children—easier than its predecessors, and giving, as is intended, the same privileges as the existing degree, opening the same careers, giving access to the public service and to State schools, and finally, arousing the ambition of every student. If there are too many "bachelors," why not make the examination more severe in those points connected with the foundations of the humanities? why not establish severe pass examinations in the lyceum, and thus eliminate the idle and the incapable? That is the real remedy. Nor is this all; we hear of true modern "humanities," of a "liberal" education apart from all professional requirements, having all the characteristics of a classical training, with the same end of "mental culture" in view; and in the next breath we hear that agriculture, manufactures, and commerce are all kept in view. These statements have to be reconciled. And besides, in what respect will modern humanities be a better preparation for the professions, if, as is said, these humanities can only give a really general culture, classical in fact, and "in no way special and professional"? Is ignorance of Latin and the substitution of German and English exercises a sufficient guarantee of preparation for commerce, of the acquisition of the genius of commerce and agriculture? "Oh! but we shall include book-keeping in the programme." What! is the unity of secondary instruction to be sacrificed to book-keeping? is your so-called general culture to be subordinated to the requirements of an office or of a bank? If you are in such a hurry to teach your children book-keeping—which can be learned in a few weeks—let them have special lessons in keeping accounts, or let them have a complementary course at the lyceum. Let us look a little closer at the programme of our present special instruction, which has a better claim than "modern humanities" as a preparation for industrial, commercial, and agricultural life, and let us see in what it prepares for it. Classical instruction contains all that is comprised in special instruction. In both programmes there is the same course of French literature, literary history, general history, geography, mathematics, mechanics, physics, chemistry, natural history, and modern languages. Nothing is wanting but the elements of political economy, law, and book-keeping. Classical instruction is therefore more justified than Fontaine's hero in saying—

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* M. Maneuvrier, an old boy at the École Normale, is, I believe, at the head of a great manufactory, which does not prevent him from writing remarkable books on education. M. Dezeimeiris, an excellent Greek scholar, and a correspondent of the *Académie des inscriptions et des belles lettres*, recently showed the Minister of Agriculture, in his vineyard at Bordelais, the effect of rational pruning on the phylloxera. Greek does not therefore prevent "vine-culture." Mr. Roby is an example of this in England (*Tr.*).

† Special in its object, this system would be also general in the sense that it would be content with general notions on the different manufacturing and agricultural professions, without thereby being so detailed as to be *technical*.

> "S'il en faut faire autant afin que l'on me flatte,
> Cela n'est pas bien malaise."

As for the programmes of French instruction put forward, there is nearly as great a medley of the different subjects as in the present classical programmes. With the exception of a few differences in detail in the proportion of the different sciences, the science subjects appear in the same order as in the classical course. The only essential difference is the substitution of a *second* modern language for Latin. So we are saved by adding Goethe's "Faust" to Shakespeare's "Hamlet," instead of the "Æneid"! And for this magnificent result secondary education is to be turned upside down, classical training is to be disorganized, and to be asphyxiated by a rarefication of its environment. Instead of all learning Latin and one modern language chosen by themselves, our children will learn a fundamental modern language and a complementary modern language.

What essential diversity of aptitudes will be thus satisfied? What minds are unsuited to Latin and English, and suited to German and English? I repeat that the whole system of modern humanities is a mass of contradictions—it is a general, special, a disinterested utilitarian system of instruction. Your so-called classical instruction, like the bat in the fable, can say, "I am general, liberal, literary, and poetical,—look at my wings! I am special, industrial, commercial, agricultural,—look at my feet!"

CHAPTER II.

MODERN LANGUAGES AND LITERATURE.

THE corner-stone of the edifice that our reformers are on the point of constructing is instruction in modern languages. "Now that modern idioms are crystallized, why should they not be substituted for the dead languages?" In this summary manner the question is solved by a simple query, without any reference to history or the essential elements of our national literature and of our national spirit. They quite forget that there are not merely pedagogic, but historical and patriotic, reasons why France, a neo-Latin nation, largely owing to its connection with Latin literature the hereditary qualities of its own tongue, of its own literature, of its taste, of its national art, and of its national spirit, does not sever its last link with classical antiquity by the sacrifice of Latin in the instruction of the "lettered" classes. I have shown in the preceding pages that the simultaneous study of Latin and French is the means of intellectual and æsthetic education most appropriate to the spirit of our youth. Finally, I showed that there were international reasons; when Germany and England retain with jealous care not only Latin but Greek, it would be imprudent from the patriotic point of view to launch our secondary education on such an adventurous career, to take away its historical "hinge," so to speak, its traditional unity, and at the same time its bond of kinship with other countries. To counterbalance such grave considerations as these, the study of modern languages must offer exceptional advantages. Let us now examine their real educative value.

I shall, first of all, lay down the principle that there are two ways of learning a language—the literary, and the utilitarian. In the first case, we do not propose to speak the language, and therefore do not propose to remember words in common use; we treat it as the language of poets, which the majority hear and do not speak. In other words, we study it as an object of art. What is of importance, then, is not so much the usual sense of words, or the real and sometimes common things they express, but the literary value of the terms and their associations, and therefore the ideas and human sentiments they express. In art and literature expression is everything, words of themselves are of no account. The literary study of a language is not a mere instrument of *knowledge*, but an instrument of art, of conception, of style, and therefore of intellectual and æsthetic education. They propose in this new system to teach the modern languages as literature; but, in the first place, who will teach them? Foreigners who are but little conversant with the subtleties of the French language, or Frenchmen as little conversant with foreign languages. Besides, in instruction in modern languages, the tendency to utilitarianism is almost irresistible. English and German are too contemporary in character, too commercial and industrial to easily become objects of æsthetic taste and pure literature. The temptation to utilitarianism will be universal and incessant. The fact is that modern languages are only learned so that the learner may speak them, that is, they are learned for a practical purpose. This difficult task will absorb all their efforts, and after learning modern languages some eight or nine years, what do our boys from the lyceums know? A teacher of English or German has so many pupils in a class and so many classes to teach that it is impossible for him to teach English or German to such a number, nor can he even teach them to read those languages fluently. The result is that our boys know no more English or German than they know of Latin or Greek. All that can *be done* or ought to be done is to give them a sound grammatical training, and familiarize them with the ordinary vocabulary of the language, so that they can take up the subject more seriously when compelled to do so. They can only learn how to speak it, in fact, after residence abroad, or by daily intercourse with foreigners.* The net result is that the literary study of Latin will have been sacrificed for a knowledge of foreign languages that will be neither literary nor commercial. Neither Apollo nor Mercury will be satisfied.

If we read M. Bossert's report on the instruction in modern languages, we shall recognize that they cannot be "equivalent" to the classics in education. According to M. Bossert, the first point is pronunciation. From the beginning the spoken word "must always precede the written word." First the teacher says to his class *father* or *vater*, and makes a few, "or even all the boys together," repeat it mechanically after him. Then and only then is the word written on the blackboard. In words of several syllables they are to master the accentuated syllable first, because it is the "soul" of the word, the only part that foreigners lay stress upon. "From the master's lips" the boy must learn to read. Besides, the ball is set rolling with the learning of common and familiar words. Then exercises, practical exercises, are "essential;" translation into French is of secondary moment, because here "no longer German and English, but the mother tongue, is the object in view." Then they must try to "converse" in English and German. In a word, the object of this "classical" instruction is the "conversation manual," which will become the Bible of the modern lyceums. "Few people in these days will maintain," says M. Bossert, "that Latin is learned for the purpose of improving our knowledge of French"—a narrow and, in my opinion, a disputable statement. "If the same rule were to be applied to modern languages," he continues, "it would be far better to banish them from the curriculum." This good advice is worth noting. One of two things will happen: either the boys will learn to speak and read the modern languages fluently, and then the fluent reading of foreign texts will have no greater pedagogic value than the reading of works in the mother tongue; or, the boys will treat the modern languages as they treat the dead languages, and, then, what is the gain? "Yes, what!" says M. Bossert, "ploughing laboriously through the conjugations and declensions of the Germanic languages, learning one's bearings in the wilderness of construction, in the thick parts of a vocabulary, to find at the end of all this labour nothing more than a new term of comparison with the mother tongue! That would certainly be, in Shakespeare's phrase, 'Much ado about nothing.'" And all this would only teach you one language. You cannot hope to know at once English for the sake of reading Shakespeare, German for Goethe, Italian for Dante, and Spanish for Cervantes. Why, then, give up the languages and the literature from which the French language and literature have sprung? If there are any nations who ought not to banish Latin from secondary education, the neo-Latin races should certainly not, prepared as they are by their own language to assimilate Latin.

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* Such residence is almost necessary for a boy destined for the higher paths of commerce, etc.

There is much astonishment and lamentation that foreign languages are so little known and used in France. In Germany, they say, French is studied to some purpose from the commencement of school-life, and English from the time the boy reaches the fourth class from the bottom of the school. Yes! but that is because Latin prepares the Germans for the study of French (the language nearest to the classics), while German itself makes the study of English easier. Similarly, the English boy who has learned Latin easily picks up French, and finds it no great effort to learn German. In France, on the contrary, how difficult it is to learn German and English! Latin, however, offers us no great difficulties. Italian and Spanish, which are of very little use to us, would be as easy to us as French is to Italians and Spaniards. It is not so long ago since men of letters and the clergy spoke Latin, which proves that it is a language that can be easily acquired. There is no reason, therefore, for suppressing Latin because it is very difficult, to replace it by German and English which present almost as much difficulty as Greek.

The facility with which children learn a language, and learn it without the grammar, has been much exaggerated. No doubt, if a child is entrusted to a foreign nurse or to a foreign governess it is natural enough that it should pick up the ordinary words and phrases that are necessary to understand others and to be understood ; but that is almost all the child does, and it will not go much further. Do you expect, M. Frary was asked, to supply the lyceums with English and German nurses ? A child only learns a foreign language as it learns its mother tongue—if it is compelled to do so by necessity. If you do not place boys at school in this situation, in all but a few very rare exceptions you will be unable to teach them to speak English and German well—unless, indeed, you call the use of a hundred or so of words and current phrases *speaking* a language. And what is the intellectual value of such periodic repetition ? *

I may add that modern languages do not constitute a unified system of instruction because they differ, not only in nature, but in utility. The languages useful to *savants* are: (1) German; (2) English. The literary languages are: (1) English;* (2) Italian; and (3) German.† The commercial languages most useful to the French are: (1) English; (2) Spanish. It follows that modern languages are an object of special courses of study essentially varying with the end in view, and therefore accessory and subordinated to more fundamental subjects. Imagine the anarchy that would ensue where some learned English, others German, others Spanish, others Italian, others Arabic—it would be a regular Tower of Babel. And yet the boy must, on entering school-life, choose one of these modern languages without knowing with any certainty whether it is the language he will require in later years.

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* According to Dr. Lebon, a well-known traveller, familiar with modern languages (and moreover hostile to a classical training), modern languages should only be attempted early in childhood or at the latter end of school-life. "The study of modern languages," he says, "*in no way exercises the intellect*, but contributes a means of acquiring the knowledge we should possess. The child learns them unconsciously when in contact with foreigners. If he cannot learn them at that age, they should be referred to the end of his education. By methods from which dictionaries and grammars were rigorously excluded, and which I have on several occasions ascertained to be efficacious, any one in a few months can learn to read a language fluently, while English and German, if taught as Latin and Greek are, with dictionary or grammar, for eight or nine years at school, leave ninety-five boys out of a hundred unable at the end of their course to read an English or German newspaper." It is much to be desired that Dr. Lebon would give us further information as to the expeditious method of which he speaks, for it is impossible in the University to learn languages from early childhood.

In fact, the German and English literatures, however admirable they may be, have not, in general, the classical qualities, and are especially deficient in those qualities which harmonize with the qualities of the French race. Imagination in its freest, most capricious, widest, and most unbridled expression is predominant in them. And with this imagination is conjoined passion—violent and brutal passion. Look at Shakespeare. There is far too much inequality, and in his noblest work far too much profundity and subtlety, far too little juvenility for our young people. Dante is too subtle and too passionate; Goethe is too scientific and makes too much display of his science. They are therefore not *classical* to French children. There is only a century of German literature, and it is somewhat forced, exhibiting a kind of pedantry in sentiments and ideas. Born in the struggle against foreign influence, it is still animated by the spirit of that struggle. It is, as M. Darmesteter rightly says, the creation of patriots who said, "We want a poetry of our own." German literature, like Germany itself, is a product of volition, and it is unfortunate that the heart of Germany should beat with such a sentiment. "The real poetry of Germany has found a refuge in its philosophy—'Faust'—and in its music." *

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* Three centuries of masterpieces—Spenser to Shakespeare; Milton to Pope; Burns to Byron and Shelley.

† Only one century of rather artificial literature.

We are told that we shall find in modern literature "a purer and more refined morality than in our own." † But is it so certain that Shakespeare is not so coarse as Virgil? And however admirable may be, for example, the episode of Francesca in the "Inferno," or rather, exactly because it is so admirable, is a poetic picture of love suitable reading for the young? Will the sight of Paolo and Francesca carried off to eternal torment, clasped for ever in each other's arms, be enough to inspire the young with a dread of hell, or with a horror of forbidden passion? If we glance over the official programmes of modern languages, it will be seen that education by modern languages means education by novels. Here are all Walter Scott's novels, with all their countless heroines, "at the option of the candidate," as the programme puts it; here are "David Copperfield," "A Christmas Carol," "Nicholas Nickleby," "The Vicar of Wakefield," "Silas Marner," "The Mill on the Floss," and "Adam Bede;" Auerbach's "Professor's Wife," Freytag's "Soll und Haben," etc. The laws of suggestion are nowadays recognized and placed on a scientific footing; these stories of love and seduction with their long train of heroines, from the lovely Jewess in "Ivanhoe," to Marguerite in "Faust," are a continual "suggestion," especially when the scene is laid, not in the improbable realm of mythology, but in our own modern environment, in the street where the students in "Faust" run after the girls, in Marguerite's bedchamber, or at Hetty's rendezvous. A mother will not place "Faust" in the hands of her child without uneasiness. If we want

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* The German language is yet in a nebulous state; its forms are not precise enough, its rules are not sufficiently accurate, nor are its limits clearly enough defined.

† "Bulletin de l'Association pour la réforme de l'Enseignement."

to respect the natural and peaceful evolution of youthful faculties, we must continue our demand for a sound and simple instruction based upon the broad and noble ideas of Tacitus, or Cicero, or Virgil, instead of introducing children —as M. Lockroy proposed when he was Minister of Public Instruction—to the most complex literatures of civilization, and placing in their hands "Shakespeare, Tennyson, and Shelley," whom the English themselves scarcely understand.* The study of modern literatures—tempestuous and passionate as they are—is not only but moderately healthy for minds in the process of formation, but it would have a very unfortunate effect upon the preservation of the original qualities of the French language, which are mainly Latin. It is wise to furnish a young man with forms of language and style more stable than those of our own days, in which school succeeds school with startling rapidity, according to the fashion, or the philosophical system in favour; in this tempest, as it were, we are running the risk of losing pure French; our language may lose its beautiful lucidity and intellectual transparency. There is already quite enough fermentation in French literature; we have symbolists and extreme naturalists in plenty, without precipitating the dissolution of our literature by an education which is a medley of English, German, Italian, Spanish, and Arabic. Painters, sculptors, and musicians are not trained by the study of the most recent and most refined works of art, but by the study of those that afford the most classical qualities of form, style, and composition. Without these fundamental qualities there can be no great art, and on these all else should be grafted. We must study Raphael and Da Vinci, Bach and Mozart, Phidias and Praxiteles. When the education of artists abandons this tradition, our superiority in art and in artistic industries will very soon have vanished. When the literary classes abandon Latin, our literary glory will soon have passed away.

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* During the life of Robert Browning a society was formed in England, having as its president Furnival, the eminent philologist, for the object of explaining and interpreting Browning. The Rev. T. P. Kirkman, in his inaugural address, became unintentionally epigrammatic when he divided the poet's works into two classes—those that are understood and those not understood. "Where Browning is obscure, it is from excess of light." Tennyson, too, though alive, has his scholiasts and commentators, who study what is obscure in him, and delight in the unintelligible. But the French need no scholiasts as yet for pieces like Victor Hugo's "La Bouche d'Ombre."

It has been asserted that a classical education is "an education of old men." On the contrary, education by men of modern literature, by Goethe, Heine, Byron, Shelley, De Musset, will make our youth old before its time, and will turn out young men who are not young, who are disillusioned, refined, subtle, and sceptical—in a word, *decadents*. Youth is only to be found in young, simple, and straightforward literatures, not in those that have grown old and complex, of which the real value escapes those who have had no classical training. So in music, which are young,—Wagner, Chopin, Schumann, or Bach, Haydn, and Mozart? Will a child understand the deep melancholy of Schumann or Chopin? If he does he is to be pitied. Far better to bring up our youth in the serene school of those who are called "the old masters," and who are in reality the young. In all things it is best to begin at the beginning.

Some people believe that the classical spirit can be sufficiently communicated by translations; this also is a mistake. Translations are better than nothing for the weaker sex, who only receive the education of "amateurs," but young lads whose education is essentially active, must translate for themselves; the labour of translation is of more importance than the text translated. Partisans of the system of translations imagine that the important thing is the *intrinsic* value and the subject-matter of the "Æneid," or of the "Epistles" of Horace; but what is a translation of the "Æneid," and how is it superior to any modern work? The value of classical works lies in their execution, in their fundamental simplicity, and in their perfection of form. Depth and form are absolutely inseparable in them, and it is precisely because of those characteristics that these works are classical. Virgil translated is but a tenth-rate poet. Translations should be used by the teacher as a complement to the personal exertion of the pupils on fragmentary passages, to give them an idea of the whole, but the systematic and regular substitution of translations for texts would be a bastardizing of classical studies. Where translations are all that is required is in the modern languages they propose to substitute for the dead languages. In modern works, depth is of more account than form, and up to a certain point is of itself enough. In prose, the modern "classics" which figure on the programmes are nearly all novels; now, we may as well read "Soll und Haben" in French as in German; little will be lost, and there is even some advantage to be gained, thanks to the peculiar qualities of our language. It is true that a translation is not a faithful reproduction of Shakespeare or Goethe; but, after all, the reading of such translations widens the æsthetic horizon. On the other hand, their style is not exactly what should be set up as a model to youth. Fancy a child wanting to ape Shakespeare! *Risum teneatis, amici.*

It is said—We shall give as compensation a sound *French* education to a large number. You will be no nearer doing this than if you gave a large number a sound training in Greek and Latin. If your concern is the majority, you will have to lower the standard of Anglo-German-French instruction, just as in the case of Greek-Latin-French instruction. If, on the other hand, you do not trouble yourself about the majority—and there you will be right—you will soon find the ordinary *strata* reappearing; you will get in French—as in Latin and Greek—the lazy, the mediocrities, the "dry husks." They will know no Latin, and they will know their mother tongue none the better for that, assuming that they will know it even as well—an assumption opposed to the experience of ages. In vain will the standard of classical French instruction—of *special* instruction, to call it by its true name—be raised; a high standard will never be reached. You will be incessantly kept back by the nature of boys and masters alike. You will have a multitude, an intellectual *plebs*, as it were, who will compel you to attend closely to them, and to watch over their immediate interests, as happens in all too exclusively democratic and popular governments, in all cases where the suffrage is too direct and too universal. A whole nation will drag you down, when you wish to look at things from a loftier and broader point of view. You will be like a captive balloon. Whatever you do, a system of French instruction must mean practical, utilitarian instruction, scientific, technical, professional instruction. The prospectus of the "Association for the Reform of Secondary Instruction" gives a fresh proof of this, for there is no mention in it of anything but industry and commerce. When you wish to cultivate the beautiful for its own sake, masters and boys will cry in chorus, "What is the use of it? It is neither modern enough, scientific enough, nor practical enough." The wolf of science will pounce upon the sheepfold of literature, and will soon have devoured its inoffensive occupants. Soon it will be mathematically demonstrated that not only Horace and Virgil, but Racine and Molière are "old fogies." Your very masters will have to more or less conform to the universal spirit of exclusively French, scientific, and modern-language "amateurism;" you will rarely succeed in making them men of letters, philosophers, or disinterested *savants*. Once you write on the door of the lyceum, "Here we only teach what is useful to modern society," you will rarely find a teacher, a parent, or a pupil untainted by the utilitarian spirit. And what pure metal can defy the touchstone of utilitarianism? What use is Latin? No more use than the Venus of Milo. But what use is history, and what is the use of my knowing that Louis XIV., the Ultramarine, son of Charles the Simple, reigned from 936 to 954, and was all his life engaged in fruitless war? What is the use of so much geography? Why need I, as Tolstoi says, know all about the *canal Mariine* and its navigation? "All I have to do is to trust myself to the boatman." What is the use of geology, if I am never to be engaged in mining? That idle lads at school, or that even a paterfamilias should make such fine excuses as these, is, after all, natural enough; but should the State make them for them? The State wishes to *democratize* instruction by its "French instruction," and the result must inevitably be the lowering of the very standard it sets up. The new so-called "classical" system will never be anything but the "bastard of the lyceum and of the primary school." As for the *élite* of classical boys, they will soon be reduced to *rari nantes in gurgite vasto* (let me seize the opportunity of a Latin quotation while there is a Frenchman left who can understand it). The true interest of democracies is not to democratize everything, to reduce everything to a dead—to a plebeian—level.

It is constantly urged that modern humanities must respond to a legitimate want, because so many pupils eventually take up a course of "special" instruction, and their numbers will probably increase with the advent of the new system. The retort is obvious—Offenbach and Pierre Lecocq must be administering to a legitimate want because crowds flock to "La Belle Hélène" and to "La Fille de Madame Angot" (and I may add to bull-fights). By lowering the standard of art or of the curricula, you may be sure you are satisfying some wants; but it remains to be seen if they are the noblest.

Besides, "special" instruction has only succeeded where its success was to be expected, *i.e.* in the three first years of the course; after the third year, the boys leave. Its real *rôle* is to give moderate instruction to those who have in a few years to betake themselves to one of the industrial professions. This M. Duruy perfectly understood.

We also find the "wishes of the parents" placed in the foreground. But a State like France, the depository of *the honour of* the country, cannot abandon to its parents the effective and practical direction of instruction. Parents! Are they, as a rule, competent to judge? In the matter of instructing and bringing up their children they are too often but "children of a larger growth." Will the average father look at the question from the standpoint of the interests of nationality and of the race? Will he trouble his head about the recruiting or the preservation of the intellectual *élite*, the selection to be effected, the national traditions to be maintained, and the progress to be ensured therewith, or, finally, the competition with our neighbours, *i.e.* what may be called the international interests of education? It would be almost as foolish to consult parents on the *rôle* of Greek and Latin, or of philosophy in secondary education, on the comparative value of literature and science in education, as it would be to consult the children. Take journalists, men of letters and science, the members of the academies of science and medicine, or even the ministers themselves, how many are competent to express an opinion in matters connected with education? A savant is reported to have said, in a full sitting of the Académie de Médecine, "Greek is no use to surgeons or physicians, *therefore* it should be suppressed." A senator also remarked, "We want men for our industries and for agriculture, *therefore* Latin must be suppressed." One minister wanted to restore classics, another at the Sorbonne eulogized modern languages. There is nothing to equal the chaos in pedagogy but the chaos in politics. Let the government propose to parents and children an expeditious system, comprising the mother tongue, modern languages, and science, with a matriculation and a guarantee of admission to the civil service, and parents will blindly place their children under this apparently *useful* system; the children will be delighted; they will not be kept so long at school; they will escape the Latin and Greek they are at present expected to learn up to the age of fifteen or sixteen; French, English, and German will be the only languages in their curriculum, and, from a distance, will seem easy to them; and they will certainly be taught sciences which will be occasionally tedious enough, but which appear to be necessary for subsequent bread-winning. Well and good; let us dispose of our academic honours at as cheap a rate as possible. *Primo vivere, deinde* non *philosophari.*

But shall we have fostered the scientific spirit, as some anticipate? Not in the least. The utilitarians are on the wrong track even from this point of view, in trying to substitute for Latin humanities a system in which science must eventually assume the greatest prominence. To obtain by selection the best engineers, mechanics, physicists, strategists, administrators, etc., the surest way, as we learn from the experience of ages, is to, first of all, train the best scholars, minds steeped in literature and the artistic sense. If we pass in review the most illustrious of recent *savants*, we shall find that they were all good scholars—Claude Bernard, Pasteur, and Berthelot, as well as Laplace, Biot, Ampère, and Cuvier. If the taste for literature, art, and philosophy did not persist in a certain number, we should see theoretical science—true science—checked in its progress, and then in its turn applied science must decay. We must not therefore sacrifice to a particular and superficial utility the deepest and most fruitful forces of the human race; it is the men of letters, poets, artists, and the silver-tongued—all, in fact, who cherish the sense of the beautiful —who make *savants* possible, and prepare the way for scientific discovery. If Greece had had no Homer, Æschylus, Sophocles, Demosthenes, or Phidias, she would have had no Pythagoras, Plato, Aristotle, or Archimedes; and she would have had no Alexander. If France had not in the seventeenth century placed the humanities higher than scientific training in the education of her children, she would not have had a Descartes or a Pascal. If our forefathers had thought of nothing but teaching their children the contents of the modern syllabus, and so-called useful truths, they would have paralyzed scientific discovery, the genius of which is also the genius of *liberal* pursuits, of the *humanities*, of the *belles lettres*, and of the fine arts.*

As we are asked for facts and reasons, it has been ascertained by numerous observations in France, Germany, Belgium, and England, that those boys who have received a classical training are on the average superior to those who have only received a "modern" and scientific training. Dubois-Reymond states that boys at the gymnasiums who take up classics, even when of average ability, even when they have only done Latin and Greek grammar, are superior to the lads in the "special" schools to which boys from the *Realschulen* who have not learned Latin are admitted. And in Germany the *Realschulen*—even those of the second class—do not as in France simply represent the waifs and strays from classical instruction; many young and clever lads destined for the higher paths in some industrial occupation choose the *Realschulen ;* now, according to Dubois-Reymond, they are always inferior.† So according to statistics, which with geography and mechanics are the order of the day, the study of ancient languages and literatures is the best adapted to develop the fundamental faculties which give the impulse to the scientific faculties. This can be easily explained. The children who are learning Greek and Latin are raised above all the utilitarian interests developed by the study of modern languages; their final examination is further off; and their only motive in school-life is to work for the sake of working, or to do nothing at all. Now they all work more or less at certain hours. And in what does this work consist? In translation from French into Latin or Greek, and *vice versâ;* reflection on the sense and comparative value of terms, on the accuracy and elegance of expressions —in a word, the making a purely literary and disinterested use of the dead languages, a use opposed to that of the modern languages which are learned for the sake of speaking them. How could these intellectual gymnastics do other than produce superior results, attested as they are by statistics?

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* Let us hear what Paul Bert, a man of science, and the supporter of so many innovations, says on this point: "What I fear, and what I shall resist as far as I can, is that science is taking a fatal revenge on literature. I see this reactionary tendency growing in deliberative assemblies, and *perhaps my own just demands and those of my friends have contributed to increase its power.* But if great faults have been committed, that is no reason why greater blunders shall be perpetrated. In a word, do not let us despise the ideal because the useful has been too often neglected; the culture of the beautiful, respect for the not-useful, and the love of the ideal must inspire the youthful mind. Now, there is only one way of attaining this result—by a good literary culture" ("Leçons et discours," 2nd edit., p. 324).

† One of our most eminent critics, before his connection with the *Revue des Deux Mondes*, was on the staff of the École Normale Supérieure, and taught French literature to the pupils at the Collège Chaptal and at the same time to the mathematical students at the Lycée Louis-le-Grand and the Collège Sainte-Barbe. At Chaptal almost every boy passed through his hands, as he took each class at some time or other during the week, and in this way he knew the boys in six classes, of course of varying ages. Now, says M. Brunetière, "I feel, after this experience gained under exceptional conditions, that for opening the mind and for general development, for a knowledge of our own tongue, and for literary skill,

Of course, genius will manifest itself in special or in primary instruction, just as we meet with incapacity in classical instruction; however, we must not consider the individuals, but the general spirit developed by a system and the tradition it represents, and, in particular, the relation of that spirit to the preservation and progress of the national spirit. Even if in individual cases of competition the "modern" is better than the "classical" training, this would by no means prove that the new system could be generalized without danger to the country. The literary spirit, hitherto fostered in France by classical education, is

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the boys who instead of a classical training have received a purely French education, with the addition of modern languages, are at least two and perhaps three years behind their fellows." At Louis-le-Grand and Sainte-Barbe, M. Brunetière's pupils had done Latin and Greek grammar only, and had never had a thorough grounding in that, intending to devote themselves at an early period exclusively to mathematics. Here again the superiority of even a little classical training was equally marked. These observations agree with my own while I was engaged in teaching.

communicated to all as by a kind of contagion, even in "special" instruction, and this spirit will persist for a certain number of years; but dry up the classical springs, dull the intellectual environment of the ruling classes, change the moral climate of the country, and France will soon be utilitarian and prosaic. In fact, when this comes about, France will have ceased to have a moral and political existence.

It is constantly objected that women can receive an excellent education without Latin or Greek; but how does the education that is successful in the case of girls help us when we are laying down the lines of an education for the majority of boys? In the first place, girls are only half—and an original half—of the human race; to assimilate them to boys, or *vice versâ,* is to change the proportions in the terms of the problem; it is not only altering the solution, but actually changing the problem itself. In the second place, women take no great part in active life, in the struggle for existence; they are not, like boys, under the pressure of immediate necessities for which the instruction in school prepares. It is the man who in time will establish and maintain the family. Similarly in the political organization of society, women have no directing action, they only exert an insensible action, which comes under the head of influences; but it does not fall to their lot to strike a deadly blow or to lead the van. This more passive than active *rôle* is found again in the domain of intellect, and only the moral domain escapes from it.

Woman learns everything—so to speak—by translation, even in science. She is, intellectually, a kind of mirror which reflects in a haphazard way images projected on it in an equally haphazard way. A liberal literary or scientific education is therefore rather a luxury than a necessity to her; she sees in such an education not a compulsory task or imposition, but an honour that is paid her, and, as it were, a windfall. She takes up literature and science with the disinterested spirit of an amateur in the beautiful, and is not exposed to the utilitarian interests which influence boys. Teach chemistry to girls, and they will be proud of learning it, they will be interested in experiments which have no bearing on their future duties, and they will be interested in them precisely because they have no bearing on the future. The laws of combustion will in fact "amuse" them more than needlework and knitting. Hence the pleasure they take in learning it. Teach chemistry to boys; at once they will ask if it is part of the work for their examinations, or if it is useful in their future career; they have so many subjects to get up, that everything is referred to a utilitarian criterion. Chemistry will therefore lose almost all its educative value to them, to the advantage of its instructive and professional value. Teach modern languages or French literature to young girls, and you will find, as before, the docility of amateurs, an absence of industrial, commercial, and agricultural interests. Under such conditions, modern languages are of as much value to girls as Latin or Greek—perhaps of even more value. We are sure that they will study modern languages as literature, and not with a view to their utility in commercial life; and as they are not (with few exceptions) overworked in the matter of literary production, the faults of the moderns will not have a very unfortunate influence on their style. But if, on the other hand, intellectual and literary discipline is relaxed for boys, we are preparing for the decadence of our national art and literature. Utilitarian and professional interests only occur in the case of girls preparing for examination as teachers, etc., in short, in case of girls who have to earn their bread. There we get the counterpart of the storing up in the memory and of the scientific, historical, and geographical stupefaction which is called "preparation for the State schools." We surely do not wish to see such a state of things the rule among girls, or to prepare for ourselves as many "déclassées" as women "bachelors."

Woman is more docile, and more accessible to the ideas and impressions transmitted to her, precisely because she is not conscious of a literary and scientific instruction on as sure a basis, or with as active or as practical a scope as that given to the other sex ; she is especially guided by her artistic or moral instinct. The woman of to-day, by the relatively superior instruction she receives, is the pupil not only of poets and novelists, but also of any serious author who does not sprinkle his pages with too many crabbed words (for scientific jargon is as repulsive to woman as Greek or Latin quotations). Similarly, it is not proved that the majority of readers of works of literary or moral value are not recruited from the weaker sex ; the men as a rule are too busy ; and then men's minds are made up, their ideas are retained with all the more force, because they have never had suspicion thrown upon them. Woman, who is not dogmatic, is naturally doubtful as far as anything but her fundamental belief is concerned ; she repeatedly examines and ponders over everything in the realm of ideas, and is not without subtlety. Hence it follows that by an appropriate education we may easily produce a kind of intellectual and moral atmosphere for woman, ambient air full of shades and graces, of delicacy and refinement—by which it is good for even man to find himself enveloped. But these qualities of the feminine mind are only valuable in the total result, and that from a general point of view. It is only an atmosphere, and the majority of lads want more precise education, a less malleable, less diffuse, and more virile state of mind. Whatever career he may eventually select, the young man should have a clear, determined, accurate, and concise mind. The important thing to him is, therefore, not the passive reception of the sum-total of humanities contained in literature and science ; he must find things out for himself ; merely understanding is not enough ; he himself must produce and be "a somebody." It is no use simply showing him machinery, he must take it to pieces and put it together again, so that in his turn he may invent. Do not merely want him, like a woman, to have a kindly feeling for literature, science, and art ; but make him develop his intellect by the recognized classical exercises, so as eventually to be able to bring that intellect into play, and that in proportion to his worth, his tendencies, and the literary or scientific work allotted to him. Man should communicate to woman what is best in the intellectual world and in æsthetics ; but before he can communicate it, he must first of all discover and acquire it. The education of girls is like their holiday tours, in which they see the sea, climb mountains, and venture to the edge of a precipice or on a glacier, but always on the express condition of being accompanied and guided step by step; whereas in the case of their brothers at the lyceums, even their mothers send them alone to discover the Mediterranean.

The positions of boys and girls in the matter of education are in a measure opposed under ordinary circumstances. In the one case mental initiative must be developed to aid production ; in the other—save in the great exceptions which occur among women as well as among men—mental receptivity must be cultivated. The ideal of woman's education from the purely intellectual, literary, and scientific—I do not say moral—point of view, is to have, so to speak, a large number of planets well illumined by a borrowed light ; the ideal of man's education, to make as many suns as possible, small or great—and this we are far from doing. In the moral order, women are, equally with men if not more than they are, foci of vivifying warmth and fertility ; here their *rôle* is so important that they may well rest content with it.

The development of the sense of the beautiful and of the good in woman is of first importance ; her education should therefore be mainly moral and æsthetic ; she will transmit to her children by education or by heredity the same æsthetic or moral delicacy. As for the positive sciences, they should be taught to women so far as to develop the scientific sense which will protect them from superstition and prejudice. Women should have " clear views on everything;" technical knowledge or knowledge involving too much detail they do not need. Details which overload the memory at the expense of the physical and intellectual health are far more harmful to woman than to man; children are certain in the long run to suffer from the fatigue imposed upon the mother.

Finally, it is said that girls, in their secondary education, receive a purely modern training, without Greek or Latin; this is a pure illusion, and the truth is, they receive classical instruction *second hand.* They are saturated with Latin and Greek, although they know no word of either.* When a girl takes a pen in hand and tries to compose, she is subjected to the influence of classical traditions—although weak and indirect, as may be seen from her style. I must repeat that such an education is quite sufficient for a woman, but insufficient for a man. Applied to the stronger sex, it must eventually bring on intellectual and æsthetic sterility, because everything will become too contemporary, too utilitarian if scientific, too impressionist if æsthetic, and too little regulated by the discipline of the past. The lyceum will be like a *conservatoire de musique et déclamation,* where they only study the most recent, agreeable, and immediately useful works, the work most likely to be successful not merely with the public of the Théâtre-Française or of the Opéra, but with the public of the minor Parisian and provincial theatres.

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* They do, however, learn the elements of Latin in their last two years at school.

CHAPTER III.

FRENCH "SPECIAL" INSTRUCTION, AND THE GERMAN REALSCHULE.

As early as 1886 an attempt was made to induce the High Council of Public Instruction to agree to the transformation of "special" into classical French instruction. The draft scheme began with the following words: "The new instruction will be general and classical; it must be organized so as to respond to the *new requirements* of *modern* society, and so as to *attract* to secondary "French" studies those who have neither the taste nor the leisure for a study of the dead languages." The High Council had no difficulty in seeing that the promoters wished to divert "special" instruction from the end assigned to it by its origin and by its name. Care was taken to state that the idea of an assimilation of "French" and "classical" instruction was untenable; "there is only one true classical instruction, viz. that based upon the study of the dead languages." All other instruction directed to the same ends by other means can only be a sham "classical" instruction, which we certainly do not want. "Special" instruction must remain as at present—practical and utilitarian in tendency. It should be directed solely with a view to forming the class of mind required by industry, commerce, and agriculture. But the council was so unpardonably weak and imprudent as to allow the final examination to rank as a baccalauréat; and the minister, on consultation with his colleagues, agreed to consider this baccalauréat as equivalent to, or even in some cases superior to, the rest in the entrance to a liberal career, *or to posts* in the civil service. This made the protest of the council merely Platonic. In this "special" baccalauréat, literature, ethics, and philosophy count for next to nothing as compared with mathematics, book-keeping, and science. Hence all that the High Council feared has become a reality in spite of it, and against its express wishes. This "special" instruction, especially if converted into "French classical," will lead in less time and with less sacrifice to the same positive results as the study of Greek and Latin, and therefore will naturally be forced upon parents and children. As M. Rabier predicted in his report, classics will be considered of the past and out of date. Neither hesitation nor remorse will be felt in avoiding the disinterested intellectual effort involved in the study of the dead languages. The idleness of the young is tempted by the prospect of less effort and the same result, while the weakness of home influence, so prevalent in our days, becomes an accomplice. "Thus," concludes M. Rabier, in the name of the High Council, "this reform tends, whether avowedly or not, whether they like it or not, to the gradual extinction of the classical system." And it is this so-called "reform" that seems to be on the verge of final triumph. Law, the last safeguard, supposing it retains the classics, will be insufficient and inefficacious, for it will only attract to a really classical education a small minority of boys. Moreover, the reformers with halting logic will cry—Why learn Latin and Greek, if we are to plead in the courts in French? This, then, is the final result of recent reforms; it is proclaimed on the housetops that "aspirants to the scientific professions will learn Latin and Greek until they are fifteen or sixteen." What a triumph for those who remain faithful to Greek! But wait; *in cauda venenum*, as our fathers used to say. They will take up Latin and Greek if they refuse to adopt the "French classical system," which by the shortest and easiest road will lead to the same professions. The door of escape is wide open—and there will be a stampede. Teachers of Latin, Greek, and philosophy will be left alone with their *élite* of delicate youths. France will be defined by other nations as—a country said to be neo-Latin, with a decreasing population, once enjoying literary supremacy, but now her *savants*, teachers of science, doctors, high officials, and even her administrators and magistrates, cannot hear two words of Latin without blushing.

The reformers profess to be taking as their example the German *Realschule*, but in reality they have a very false idea of that institution. Originally, under Francke, Semler, and Hecker, these schools were professional schools; gradually as much general knowledge and Latin were introduced as to make them eventually rivals of the gymnasiums. They then ceased to be professional, and became, as it were, modified gymnasiums, giving more time to science, less to literature, and therefore considered as specially preparing—although in a perfectly general manner—for an industrial, commercial, or agricultural life. But the Germans have been careful to maintain the hierarchy—although, in my opinion, it is an insufficient hierarchy. Besides, if the *Realschule* of the second class corresponds to the French "special" instruction, their schools of the first class or "real-gymnasiums" correspond to our old "science section," but with the difference that in Germany the science schools are quite distinct from the literary schools. In the real-gymnasiums—especially in Prussia—the students do far more Latin and literature than our science students. Before many years are over, Latin—to which all German schools are returning—will be required everywhere.

In Germany, secondary education applies to a portion of the community which has neither the same rights nor the same social duties as the corresponding section of French society.* The German middle classes are not, as in France, the only ruling class in a democracy which has universal suffrage. The feudal system has left numerous vestiges in Germany; the aristocracy is still of considerable political importance; higher education in Germany has a peculiar vitality and a directive mission; in a word, the German middle classes are called neither by the letter nor by the spirit of their institutions to exercise a preponderating influence on the administration of the government. Germany might therefore, without any great inconvenience, narrow the field of liberal education, and restrict it to that *élite* which is likely to go to the universities. In spite of this, when creating the *Realschule* with a view to the interests of industry, commerce, and agriculture, Germany has determined to make as general as possible the classical training which she has maintained in its integrity in the gymnasiums. With us, the middle classes form the political aristocracy of our democracy; they alone, by a purely moral and social influence, can counterbalance the mass of the people, who are invested with the same political rights, but are not so well educated. If the masses became the ruling classes, we should have, in a measure, a government of primary instruction, in which general, far-sighted, and disinterested views would be necessarily sacrificed to the material needs, or to the passions of the moment. It follows that all the comparisons that are constantly made between our "special" instruction and the *Realschule* in Germany prove nothing. When France is handed over to a ruling class, brought up under a system of "special" or "French classical" instruction, she will be a degraded nation, left to the tender mercies of mediocrities and barbarians.*

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* *Vide*, on this point, M. Ferneuil's volume, "La Réforme de l'Instruction en France," the conclusions in which I call in question.

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* But even in Germany, enlightened minds protest, with the Rector of the University of Berlin, against the increasing realism of the *Realschule*, and against the American tendencies too prevalent in the gymnasiums and in the universities. "I confess," says Dubois-Reymond, "that I share the opinion of those who want a single type of school, from which the boys will proceed, prepared either for the university, the army, or the technical schools. Properly conceived, these schools would be classical gymnasiums, reformed in a rational manner. Independently of all administrative regulations, the rivalry with the *Realschule* would be terminated if the gymnasium sacrificed to present exigencies some of its very honourable but superannuated pretensions, and conformed more to the tendencies of

In 1870 a great blunder was made in Germany, analogous to that which has been perpetrated in France. The Prussian Minister of Public Instruction, after having taken the advice of a body of *savants*, took no notice of their recommendations. They unanimously recommended that boys should be versed in literature, with intellects developed, fortified with a good Latin and Greek education, and that they should not have too much mathematics. But at that time the *Realschule* was in a critical state, for boys were leaving it for want of an outlet for higher instruction. All who were interested were in despair. Besides, teachers for modern languages and natural history could not be obtained. The ministry, sacrificing permanent to temporary interests—as politicians too often do—decided in 1870 that students with diplomas from the real-gymnasiums (the counterpart of our Bacheliers ès Sc., but knowing more Latin) should be allowed to enter the universities as students "in mathematics, natural science, or modern philology;" the latter being interpreted is equivalent to "modern languages." It was also added that, in the allocation of professional distinctions, pupils from the gymnasiums should, *cæteris paribus*, have the preference. As for medicine, theology, and higher literary work, they are as absolutely closed to pupils from the real-gymnasiums as to the Bacheliers ès Sc. This ministerial decree was not allowed to pass unchallenged, and is still severely criticised. To far-sighted observers the success of Americanism and realism has caused much anxiety, although in reality the question is the simple one of teaching modern languages, natural history, and mathematics, without Greek and with Latin. Further, very few pupils from the

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modern times." After an enumeration of the changes he proposes in instruction in the gymnasium, he concludes: "It seems to me that a reform such as I have ventured to point out would be the best resistance we could offer to the invasion of our modern civilization by realism. The gymnasium, rejuvenated and brought into harmony with modern requirements, would for the first time be a formidable opponent to realism."

real-gymnasium apply for the *maturitätsprüfung* — the equivalent to our baccalauréat.

Germany is also making an effort to return to the unity of secondary instruction. In the scheme of 1882 the instruction in the first three classes of the *Realschule* corresponds to that of the first classes in the classical gymnasium, so as to allow those to pass from the *Realschule* to the gymnasium who have the capacity or the wish for a longer and sounder training. In this way there will be but two branches in secondary instruction, only differing in (1) the presence or absence of Greek, (2) the greater or less prominence awarded to science.

In Germany—and in England—the tendency of the *Realschule* to realism is corrected by the custom of proceeding to the universities. This is an aristocratic tradition, a tradition among all self-respecting classes, just as in France the taking of the baccalauréat is a tradition among the middle classes. But in France the idea is that instruction is now complete, whereas in England and Germany this is simply the entrance to a higher education. If we retain in France a utilitarian and "realistic" baccalauréat, if we suppress this platform on which the educated classes of every country meet in common — Latin — we need no longer endeavour to maintain a system that will be classical, disinterested, and fundamentally literary; science and its applications will eventually absorb everything—even French literature; for as far as the universities are concerned, the French are somewhat restive under any prolongation of their studies. You will find it difficult to make parents believe that it is necessary to send young men to follow a course of lectures on the Investiture Dispute, or on Ronsard and the sixteenth century, or on the origin of German literature, etc. To launch their sons into student-life to acquire a knowledge of all these special subjects is what parents will not consent to; they have too little confidence in the French child's wisdom to leave him to his own devices "in the streets of a great town," unless they are absolutely forced to do so, as is the case in the study of law or medicine. Then it is said that to read Ronsard himself, or literary history, or criticisms on literature, is quite as valuable a training as listening to a few discourses of a professor to his audience. What can be learned from a course of that kind that cannot be learned from books? Besides, they add, the professor will in all probability publish his course of lectures, if he has discovered anything interesting; and we can read them at home. In Germany four-fifths of the pupils at the gymnasium proceed to the universities, and the numbers are the larger because the Protestant pastors go there to learn theology; it may therefore be said that secondary and higher instruction are continuous. In France, a middle class, democratic, and also Catholic country, it is simply chimerical to expect an analogous result. Our secondary education must be, if necessary, sufficient in itself for all purposes. Those who at present are striving to subordinate it to higher instruction, and to impoverish it and restrict it under the pretence of afterwards sending our youth to universities imitated from the Germans (where, however, they will receive higher instruction without knowing a word of Latin), appear to me to be neglecting to take into account the difference between the two countries. We must certainly enrich and strengthen higher instruction, and this is being done; we must also organize professional instruction, and this is not being done; but what is of more importance than anything else is to strengthen the only instruction which has as its proper object not knowledge and its practical applications, but the intellectual, æsthetic, moral, and civic culture of the young who will eventually be the brain of the country.

CHAPTER IV.

PROPOSED REFORMS.

I. To sum up,—at a time when Germany, England, and even Italy are anxious on account of the increase of the *Realschulen* and of the "realism" encouraged therein, when these countries are proposing to return to the "single secondary school," we are urged in France to substitute a kind of Anglo-Germano-scientific harlequinade for classical culture, to suppress Latin, which is both universally traditional and a part of French tradition, and which has contributed to the development of French influence. I myself feel that the time has not yet come for breaking our connection with a literature with which French literature is so intimately related. "Gentlemen of the English or German guard, fire first!"

But the English and Germans are careful to keep to a classical training. We have just seen that the Germans in particular jealously preserve, side by side with the *Realschulen*, the gymnasiums in which Latin is learned for nine years and Greek for seven. In the *Realschulen* themselves, at least in those of the first class or *real-gymnasiums*, the study of Latin is revived so far as to have allotted to it in certain institutions thirty-four hours a week (and this for nine years)! Must the resources of the State be employed—limited as they are—in the futile manufacture of another system of secondary education, for the simple pleasure of replacing Latin (the *sine quâ non* of all real literary education) by a modern language, and thus in the creation of a fatal competition with the only studies considered in all other countries deserving of the name of "classical"?* Is that the best way of spending our resources? It would be infinitely better if we consecrated our resources to the establishment of "the great public service we have not got," a system of really professional instruction.

Technical instruction in France is in a rudimentary and chaotic state. Professional schools have been created here and there, haphazard, "on no general plan, and without any logical system," as M. Maneuvrier says. Some belong to the State, others to the departments, others to the communes; some are under the control of the Minister of Public Instruction; some depend on the Public Works Department; others on the Minister of Commerce, or the Minister of Agriculture. An inventory of our technical instruction is very soon made, and M. Maneuvrier sums it up in a few lines.† We have eight commercial schools; Germany has two hundred. We have a dozen schools for those entering industrial life; Germany has more than a hundred. In the face of this state of things, to squander the finances with fatal effect on classical instruction—which is all we have left—*without even replacing it by proper professional instruction*, would be worse than madness from the national and international points of view. If professional and technical training were soundly organized, a number of our sixty thousand boys, after a few years of "special" instruction, would take up their technical work; this may be inferred from the considerable number of these boys—about one-third—who actually do so at present. Those youths would only remain who intended to devote themselves to the end of their school-life to the "humanities."

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* Even in America Latin and Greek are in the forefront; girls often learn Latin. The elements of Latin have been introduced in the primary schools. "The *rôle* assigned to Latin in the American school," says M. Buisson, "is one of the peculiarities that first strike the visitor, especially if he be a Frenchman. Everything surprises him, both the fact the Latin is in every curriculum, even where it is apparently out of place, and the way in which it is taught."

† Schools of Arts and Trades, Chalons, Aix, Angers; Schools of Mines, Douai, Alais; École de la Martinière at Lyons; school of weaving and spinning at Amiens; schools for watch aud clock-making at Cluses and Besançon; for china and pottery at Limoges; apprentice schools at Nantes and Havre; in Paris, the institutions of S. Nicolas, the workshop-school of La Villette in La Rue de Tournette, and for cabinet-making in the Rue de Reuilly; a few farming-schools in the departments, and a few communal commercial schools.

For the latest returns on this point, *vide* "L'Enseignement Supérieur et L'Enseignement Technique en France," by Paul Melon, 1891: Armand *Colin*; "Les Écoles françaises Civiles," by A. Andréani, 1891: Berger-*Levrault (Tr.)*.

This, then, is the solution. We must organize not two *equal types*, but three unequal degrees of secondary instruction—classical, special, and professional. There would be no difference in secondary education between these, except in some branches of knowledge and of *instruction*, properly so called, notably individual sciences which may be easily substituted one for the other, history and geography, and finally Greek. If, for instance, mechanics will be useful later on, drop botany and mineralogy and learn mechanics; if common law, or commercial geography, or even book-keeping be preferred, choose whatever you like, and there is no inconvenience attached to a choice; in "mental chemistry," ten atoms of common law may replace ten atoms of commercial geography; this is the only specialization which is without danger to the school. But there should be no difference with regard to what is the very soul of a classical education: (1) the national language, French; (2) the second national language, historically and as literature, viz. Latin—which is also the international language in the culture of the educated classes; (3) the general theory of mathematical and physical science, which is the same for all; (4) the study of philosophy and ethics, which is original and unrivalled, and the necessary crown of a liberal education, especially in a country where the religious spirit is weakened, and in which morals have become purely lay. We therefore lay down in secondary instruction a constant educative and a variable instructive side, fundamental obligatory classes and optional courses. Our motto is—not the most ignoble motto in the world, *Omnibus omnia*—but *Omnibus optima.*

As for "French" instruction with science and modern languages, it is not in itself to be despised, but we have seen that it is not the real type of secondary classical, liberal, and *national* instruction. However profitable such an education may be, it will be inferior, and should be openly confessed to be inferior, in the interests of a classical training, as long as our conditions of national greatness and influence, as well as those of other nations, are not so profoundly modified as to allow us an independent bias in the matter of classics, or even to allow it to all nations. Either you want "humanities," and can pursue the study of the classics, or you neither will nor can; this includes all possibilities, but there are not ten ways of studying humanities in a given nation with a given past, with a given future to be ensured, with intellectual unity to be secured, and with a position to maintain with respect to other nations. Are these words of mine inspired by a superstitious reverence for Latin for its own sake? No, but they are inspired by a superstitious reverence for the glory of France. Blunders are worst in education, because whole generations are compromised. We do not want to add an intellectual to a military Sedan.

The true object of special instruction should be to give to mediocrities of every kind the means of becoming, not artists or men of letters, but masculine Marthas, who can intelligently take their part in the great national household, having had the elements of literary culture, and having had their minds developed. We want Marthas as well as Marys; but this is no reason for rewarding both equally. One man—as a man—may be worth as much as another; but a blacksmith is not as good as a shoemaker—as a shoemaker; and a shoemaker is not as good as a blacksmith—as a blacksmith; *ne sutor ultra crepidam.* Here the High Council committed its first and serious blunder, the effect of which has been disastrous. But the remedy is simple. Strengthen "special" instruction in its own domain, and raise it a stage higher. It will then be what its original founder intended it to be—a half-primary, half-secondary system of instruction, preparatory for industrial life, intended for those who have neither *taste* nor *means*, and, most of all, for those who have not the *time* to receive a complete and general training. It must be admitted that the State is inverting the hierarchy so needful to a democracy, when it gives the same "laurel crown" to those who had the merit, or at least the good intention of pursuing their classical studies as to those who, absorbed by their immediate interests, hasten over their school-life, voluntarily or compelled thereto by necessity, so as to take up their career in life as quickly as possible. We hear it constantly said that our democracy is in a hurry; yes, and far too much so. This is a fault common to all democracies, but in particular to the French and to the youth of France. It were far better to check this precipitation and thoughtlessness than to give way to it and to offer to it an expeditious course of instruction, an express train, as it were, to reach lucrative positions. In any case, those who are pressed on have only to dispense with classics; but do not let them imagine that they are recompensed by a title which can only satisfy their *amour propre*, and deceive others as to their true worth. Why, except for the purpose of flattering their own vanity and that of their relations, should they want the title of bachelor when they have not been through the proper course, and when they do not need the title in their industrial or commercial career? Why not pass a law declaring that every Frenchman is born a bachelor and a chevalier of the Legion of Honour?

II. The principal features of the reform I propose are as follows:—

1. Secondary education is fundamentally but *one* system: (1) The literature of the mother country; (2) Latin literature, from which modern literature has sprung, and which in

these days is necessary for the unity of national and international spirit in the educated classes ; (3) general history ; (4) the elements of mathematics and physics. Where diversity arises, it should only be in the following special subjects : Greek, secondary science subjects, with applied science, and modern languages.

2. The final examination on leaving school or entering a university, such as the French baccalauréat, is but *one* examination, based upon the humanities, with four alternatives : (1) literature and philosophy ; (2) literature and mathematics ; (3) literature and natural science ; (4) literature with industrial and economic science.

3. Classes in French, Latin, general history, and philosophy, will be common to all boys without exception, while at school. Greek may be replaced by equivalent subjects in the two last years of school-life.

4. From fourteen to fifteen years of age, a boy may attend optional classes in mathematics if he is destined for a scientific career.

5. For those who wish to take the examination in literature and mathematics, or in literature and natural science, the four hours of Greek may be replaced by four hours at extra science after the age of fifteen or sixteen.

6. At sixteen or seventeen candidates destined for a scientific career may substitute science for three out of the four lessons in philosophy. The classes in philosophy, which all are not obliged to attend, will be restricted to candidates for the examination in literature and philosophy, the subjects being the history of philosophy, explanation of philosophical writers, and questions in philosophy.

7. Candidates for the examination in literature and economic and industrial science may replace Greek at fifteen or sixteen by applied science, industrial, agricultural, and commercial economy, and modern languages. At sixteen or seventeen they may replace three of the four classes in philosophy by the study of industrial and commercial geography and law, and by extra classes in modern languages.

In both cases optional classes in book-keeping may be attended.

8. The first and obligatory part of the final examination will consist of: (1) Latin translation, in order to ensure a sound knowledge of Latin; (2) a French essay. In the case of candidates in philosophy and literature, it would be as well to add a piece of easy Greek for translation, and for other candidates a paper on modern languages. A *viva voce* in Greek and modern languages will be obligatory on all candidates. The second obligatory part will consist of—

A French essay on some philosophical subject.

For candidates in literature and mathematics, a paper in mathematics.

For candidates in literature and natural science, a paper in natural science.

For candidates in literature, economics, and industrial science, a paper in economics and industrial science.

9. Candidates in philosophy may acquire certificates for other subjects than those in which they are specializing, by presenting themselves for—(1) a paper in modern languages; (2) a paper on the particular science subjects they wish to take up; (3) *viva voce* in modern languages and science. Similarly, candidates in science may present themselves for examination in philosophy by taking papers (1) in Greek, (2) in philosophy.

If any lads should find their ideas as to their vocation modified by the end of school-life, they can very easily change their pursuit and choose at their own pleasure after a few complementary courses; and eventually they will gain a double diploma.

10. Special instruction will take a more practical form and abandon its pretensions to be classical; it will be limited to four years.

The diploma will be given at the end of this time after an examination with a view to the ordinary paths of industry, commerce, and agriculture. Examination in economic and industrial science will provide for the higher paths of these professions the literary, well-educated, and liberal *élite* they need.

11. Professional and technical instruction will be so organized as to furnish a natural complement either to the classical side of the economic and industrial subdivision or to "special" instruction.

It will be noticed that in this system nothing is sacrificed and all subjects are included. Greek, of which a sound knowledge is required from some, will be retained for the rest in a moderately easy form. "Classical French" instruction is unnecessary by this organization of a classical instruction with economic and industrial science. Finally, legitimate prominence is given to modern languages for those who need them. We have then a single type of secondary education, Greek and applied science being the only variants.

If the fanatical adorers of industry, commerce, and agriculture (the fashionable divinities of the day) do not find the amount of economic and industrial science enough to suit them, we might replace Greek, at fifteen or sixteen (or even at fourteen) by science and modern languages, on the deliberate statement by parents that their child is definitely intended for industry, commerce, or agriculture. The Franco-Latin instruction thus organized would be certainly worth far more than the "French instruction" with which we are threatened. No boy would be prevented from recurring in later years to the liberal professions, to the law, medicine, etc., because he would only have to complete his work in Greek. This would be their only punishment for not having known their own minds at first. Five hours more for science and modern languages at fourteen or fifteen, and four hours more at fifteen or sixteen, ought to content the utilitarian Minotaur, and would compromise neither the liberal character nor the fundamental unity of the classical training, nor its harmony with the Latin training universal in other nations. But I think that a simple division of science subjects at fifteen, sixteen, or seventeen would be quite enough.

We must conclude that the State should maintain and even increase the severity of its requirements in examinations, in proportion as the number of candidates and petitioners for appointments increases; a lawyer or a doctor is not only a lawyer or a doctor, he is a part of the ruling class necessary to a democracy, and has a mission, a civic duty to fulfil. It is the right and the duty of the State to say to them, "You will be men of letters, you will not simply be workmen—surgeons, or merchant-doctors, or mere artisan lawyers, mere business men, with the motto, *Dulces ante omnia . . . Nummi.* And so with all the liberal professions. Instead of opening the gates of the public service to those who have taken a short cut, the State should say, "You cannot enter unless you have received the education which makes the real *élite* of the country. It is not enough for a public servant to know how to read, write, or keep accounts; *fonction oblige;* you cannot be a part of the administration unless you are animated by the traditional spirit which has made France what she is." In the education it gives, the State must only have in view the nation and the race she represents. To require the State to give an instruction which is almost exclusively directed to individual necessities, which has in view from the outset only our immediate interests, is to ask it to betray its mission, to ask it to commit also a crime of *lèse-nationalité,* and, if I may say so, *lèse-race.* This, however, is what most of our modern reformers seem to me to propose; they pique themselves on being practical, and yet, as Montesquieu says, they want to hew down the tree to get the sooner at the fruit. The old university was blamed for forming a literary nation; if the new formed a nation of foremen, as has been said, should we be any the more free or strong? *

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* Paul Bert, "Lecons, discours, et conferences," loc. cit.

No real education in liberty and civic virility has yet been organized for our middle classes; but is that the fault of Latin and Greek? Will it be enough, as is supposed, to suppress them, to reduce classics to studies at second-hand, in order to give mental ballast, grasp, and energy? That is far too good to be true. On philosophy and social science falls the task of forming a middle class fitted to the lofty duties of its political and social function; but a larger share can be given to these studies without suppressing classics, which form the natural preparation for them. Positive science and modern languages have no particular value in forming free citizens; on the other hand, we do not find that classics prevent the Germans or English from practising certain political virtues in which we are lacking. The old system of education was called liberal because it was disinterested. In the republics of antiquity, the free man was the man who was not concerned with the material and mechanical applications of science and art, but sought after the beautiful and the true for their own sake, after mental culture for the mind's sake. Liberty, liberality, and disinterestedness were synonymous. Further, liberty was conceived of as inseparable from the "public weal," the city, the fatherland, *i.e.* the human group of which the individual was a member; patriotism was the practical form of scientific, æsthetic, and philosophical disinterestedness. The free man was therefore the citizen, he whose main interest was the good of that republic of which the direction was intrusted to him. In spite of the increasing influence of the useful in modern life, I do not think that, especially in France, it is possible to conceive of a liberal education—primary or secondary—other than of the moral or civic type. But secondary instruction should have an æsthetic and literary as well as a philosophical and scientific character, of which primary instruction can only have the reflection. From the moral and civic point of view primary instruction should be as soundly organized as secondary; in this connection, in *fact,* it is of equal value and importance, because it is the nation that votes, chooses its representatives, and is sovereign. But it is clear that we cannot assimilate primary and secondary instruction from the literary, artistic, and scientific points of view; in the primary school it is enough to develop the mind so as to be capable of receiving the best literary, scientific, philosophical, or artistic impressions; in secondary schools we must prepare not merely "receivers," but producers, initiators, even creators, if possible, who will come to the front by selection. If you lower the literary, artistic, scientific, and philosophical standard of instruction under the pretence of bringing it nearer the democratic mass, you will sterilize the productive and creative part of the nation. Under the pretext of giving a "more practical and more active," a more modern and more "democratic" education, you will suppress the very source of high intellectual activity, and you will be preparing for the downfall of democracy itself.

Do not therefore allow primary instruction, necessary as it is in its true place, elevated and noble as it should become, to usurp a place which is not its own, to swallow up all other instruction, and to invade higher regions under different names. In these days democracy, it is true, cannot readily conceive the nature of the higher culture of others, that refreshes them like fruitful waters from the mountain heights. It is the duty of the republic, if it realizes its mission, to strive against this tendency, to maintain those higher influences, not by privilege and monopoly, not by a hateful, aristocratic disdain of the toiling masses, but by a perfectly natural selection and by a really liberal education. On secondary instruction in France the future of the country depends, because it is the directing influence of primary instruction as well as a preparation for higher instruction. Such should be our secondary and democratic education, at least as long as the nation is to be perfectly free, as long as the whole future of France is not to be concentrated in a popular instruction conceived in an entirely utilitarian and practical spirit. A classical diploma is a social as well as a professional guarantee; those who will some day have a directive mission in the State should therefore be educated in conformity to those literary and philosophical traditions which are the glory of France.

BOOK V.

PHILOSOPHY, ETHICS, AND SOCIAL SCIENCE FROM THE NATIONAL STANDPOINT.

In the past the unity of education was to the religious mind a necessity; the master was in most cases a priest; his authority was therefore twofold—pedagogic and moral. In these days the teacher is a well-educated man, a *savant;* a man of letters, who teaches what he knows irrespective of his colleagues, and endeavours to teach as much of his own subject as possible. Latin grammar or Greek in the morning; geography or history in the evening; to-morrow geometry; and each master is in his place, inviting the boys to follow him, sometimes without avail. "One of our boys," writes the Rector of Toulouse, in his official report, "may have in the course of the day as many as five or more masters." We may fairly assume, writes M. Marion, in his report, that at least half of these masters are but poor teachers: "It would be a miracle if they were not, when all that they are expected to know is the subject they teach." What will be left in a child's mind at the end of a day, a month, or a year? Confused and disconnected ideas, without any clear conclusion, and the sense of cerebral fatigue, of a journey through chaos. Hence the question the boys ask under breath and sometimes aloud—Why, what is the good of it? The only categorical answer at present is the final sanction of the baccalauréat, the perspective of classical safety or destruction; a poor motive this for young intellects, and a motive all the more uncertain because a candidate may always be saved by an act of grace—I mean of luck. Our boys work—or do not work—for eight or nine years, only thinking of their approaching freedom, because their daily contact is with "professors," and not with educators, each master knowing nothing but his own special subject. The school is a juxtaposition of special subjects, while it should be, if we consider the skill of the teachers and the convergence of their efforts to a general end, a miniature "university."

I have repeatedly stated that pre-eminence must be awarded to those who can organize, and inspire the organism when it is constructed. Now, in education the organizing unity cannot be on the mathematical or physical side, for these subjects are too remote from literature and art. It can only spring from literary instruction, which, without directive and formative ideas, is as a brainless polypus. Let us see if it does not spring from the science of man and human society. We hear it constantly stated that instruction must be adapted to the needs of modern society; if classical instruction is not, in this connection, to be inferior to "special" instruction, if it is not to prepare the way for the triumphs of its rival under the name of "French" instruction, it must give a prominent position to moral, social, economic, and legal science, which will contribute to make education more practical and more modern, while at the same time increasing its speculative and practical value.

CHAPTER I.

MORAL AND SOCIAL SCIENCE IN THE SCHOOL THE ONLY SOLUTION OF THE PROBLEM.

In antiquity there were "many ideas on but few topics;" we moderns have too few ideas on too many topics. The proportion is reversed. The thinking subject is stormed by objects too numerous to admit of attack in detail. The ancients had the habit of concentration, systematization, and synthesis; we are parcelled out and scattered broadcast by analysis. As the horizon becomes wider we must mount higher if we are to maintain our sovereignty; the endless increase of subjects in science, history, and literature makes a sounder philosophical culture imperative. This is a law, and, moreover, it is a law in mental evolution which our modern civilization may not evade. The classics can only maintain their position by elevating their aim, and by taking as their centre of perspective the moral and social idea.

The unification of knowledge by its philosophical principles and conclusions is particularly necessary in France. It is, in fact, a native tendency of the French genius to look at everything from the general point of view, to analyze everything, to reason everything out. This tendency has become more and more manifest since the days of Descartes and the eighteenth century; we cannot expect to destroy it, nor can we hope to change the national spirit. It has its inconveniences, no doubt, when a logical abstraction—akin to geometry—and a superficial or "simplifying" philosophy are enough to satisfy all requirements, but the remedy for abuse lies in a better use of our rationalism. Since the French people, careless as they generally are of tradition, and more and more composed of free-thinkers, endeavour to judge everything by reasons—and those reasons universal—do not let us leave it to journalists, lawyers, and politicians, to furnish the nation with a philosophy; let us give to the moral and political training of the directing classes more solidity and a wider range.

From the social point of view the main cause of our present uneasiness is the antinomy of ideas or of directions between different classes of society, or between different political parties; the principal remedy is to be found in all systems of instruction which take as their aim the organization of ideas with a view to final harmony. This is one reason the more for teaching our youth the elements of social, economic, and political science. The divergence of opinion between great writers on these subjects will be far less than the divergence which breaks out between minds left to their instincts alone, to their prejudices, to the quasi-instruction derived from the chance reading of a book, or of papers which flatter our illusions. Besides, those who have methodically studied great questions have, *ipso facto*, gained a most precious faculty, a faculty lacking in others, and especially lacking in French youths and men—the sense of difficulties. The study of mental science is alone able to check the intellectual and moral anarchy which threatens to divide us into sections, each of which, being confined to its own egoistic speciality, would eventually lose sight of the interests of the whole, and of the relation of everything to the national unity. Neither positive science nor a purely literary training is an effectual remedy. Science, in fact, is centrifugal in its action, and if not counterpoised by philosophy will reduce the mind to the state of diffuse and formless matter. If isolated in its operation it must in the long run make us "mechanical in everything." The reader will remember the celebrated receipt given by Pascal to "manage machinery," and to put an end to importunate questioning: "Practise, take holy water, and that will stupefy you." We may say—Practise solar equations, learn ready-made formulas and symbols, and you will be stupefied. In fact, the only way to escape the curiosity of philosophy and its sallies into the inner world and the great universe, will be the mechanical faith of which Pascal speaks, or that mechanical science, which, making the intellect almost an automaton, will, in the old sense of the word, be an "*abêtissement*." Will literature, which has also become quite formal, be a sufficient palliative for that literature which is art for the sake of art, style for the sake of style? No; verse will be written, such as we see already in France in our own time, rich in rhythm, but poverty-stricken as far as thought is concerned, and poetry will become a minor mechanical talent.

From the pedagogic point of view, the evils with which we are threatened are the stifling of education by instruction, the growth of realism among the young, their mental passivity, the destruction of their power of concentration by analysis, and premature specialization. Moral and social science, the organization of which ought to be the main concern of the next century, are alone able to prevent these evils.

In the first place, moral and social science have a unique privilege; they constitute both the instruction most useful to all, and the most disinterested education, and thus they offer a solution to what may be termed the great antinomy of modern education. In fact, the scope of mental science is universal, and therefore its utility as a subject of instruction is also universal. Psychology, logic, ethics, law, political and social economy, are useful in all professions—scientific and literary alike—if only for the object of strengthening and making more supple what, as Bacon says, is the instrument of instruments, man himself. Besides, these sciences deal with man in his relation to humanity; now, if it is inadmissible not to know the relations of man to the external objects of nature, it is, especially in these days, still more inadmissible not to know his relations with that other and ever-increasing world in which lies his true fatherland—human society. The principle practical " want " of modern societies is nothing but self-knowledge.

On the other hand, moral and social science is *par excellence* the subject which makes reflection imperative. Instead of keeping the attention on the external world, on the material of facts, it accustoms the student to trace such appearances to their inward reality, to the spirit which animates and gives birth to them. It forces, so to speak, an examination of the intellectual consciousness; the man who never indulges in introspection, who only sees by means of an existence which is superficial and dissipated outside his own ego, has not what may be called intellectual morality. The more natural science and the industrial arts advance, while the science of positive theology recedes, the more the necessity will be recognized of psychological, moral, and social science, to raise us gradually to a higher life; *ab exterioribus ad interiora, ab interioribus ad superiora.* And these sciences will at the same time develop to the utmost the sense of the real, because they are the only sciences which grasp realities in themselves. We should never forget in France, the land of Descartes, that inner facts—thoughts, sentiments, volitions—*exist* only because they appear, and because the condition of their existence is their being perceived, or, more strictly, their self-perception. When I am in pain, for example, I cannot ask myself if, behind the pain which is felt, there may not be some other and quite different pain or even pleasure. I can with difficulty analyze the complex causes of my pain, but the pain in itself is just what it is felt to be. It has been rightly said that the very heaven of a Laplace, although truer than the heaven of the ancients, is, nevertheless, only apparently a heaven; but the consciousness of the humblest of men is the immediate apprehension of a real existence, of a life of which the existence is self-conscious, of an inner world which is created the moment it is seen. Other sciences may develop the sense of abstract *truth*, but no other science can develop as readily the sense of the real; now in our days the sense of the real is becoming more and more necessary. But it should not be applied merely to the realities of the physical world; it should be especially applied to the realities of the moral and social world, which, by their extent and complexity, are beyond our grasp, and yet do not escape our judgment. Moral and social science have the peculiar advantage of being neither purely formal nor material; and thus they by their very nature escape the two great pitfalls of modern education: the forgetting realities for form, or the absorbing all realities in matter. If instruction were swamped by details of subjects necessary in industry, commerce, agriculture, jurisprudence, and politics, it would cease to be classical and liberal; it does not cease to be liberal, but even becomes more liberal and also more practical if it includes the study of the great economic principles and the social laws which govern industry, commerce, agriculture, jurisprudence, and politics. It then moves in an environment which is at once highly positive and highly moral. As philosophy is, so to speak, the morality of science, so political economy is the morality of industry, commerce, and agriculture; natural law is the morality of legislation; and social science is the morality of history and politics.

In the second place, moral and social science avoid the reproach of passivity which the teaching of all other sciences incurs. To understand what is said to him, a boy learning moral or social science is bound to exert some mental effort. He is even forced to form a personal opinion on many questions, for he is not furnished with cut-and-dried judgments, nor do we teach him absolute dogmas. He is invited to find out for himself, to weigh the *pros* and *cons*; he is induced to offer objections—in a word, his spirit of *finesse* is exercised, and that, too, on the greatest moral and social problems. No training in botany or chemistry can compare with this for developing or nourishing the intellect. Moral science alone affords at the same time an exercise of the faculties of the subject and a knowledge of the object; it offers a unique instance of the coincidence of the two terms; it furnishes the young with a knowledge of the very faculties they develop in the study of literature and science, and the study of those faculties also develops them. If it is a disgrace for a naturalist not to be acquainted with the mechanism of his microscope, it is none the less a disgrace for a man of the nineteenth century to use his intellect when he is unacquainted with the laws that govern it. The method that is conscious, reflective, and which takes count of itself within itself is the best of mental gymnastics. When it is objected, with M. Frary, that a knowledge of the muscles or the bones is not necessary to walking, nor of the muscles of the reasoning power for reasoning, it is forgotten that in walking the knowledge of the means does not modify the results, while, when the thought is a subject of study to itself and while it reasons out its means of knowledge, its point of application is itself and not a foreign object. Can any one suppose that an analysis of their scientific processes and a philosophical exposition of their methods would have been useless to Descartes, to Leibnitz, or, in later years, to Claude Bernard?

In the third place, philosophy is the only subject in which the mind is not necessarily overloaded with multiplicity of detail; it is therefore a remedy for mental dispersion. This advantage is due to the nature of its object and of its method. The object of philosophy, rich—and even infinite—as it is, is, none the less, a single object: the mind, what constitutes man, what goes to make our "ego," and what, while varying with the individual, is nevertheless at bottom identical in all. Philosophical science has a further characteristic, viz. that the student is never able to grasp the part except in its relation to the whole; philosophy is essentially systematic, and if it does not find the true co-ordination and subordination of things, it must imagine a provisional co-ordination, it must supply from its own resources the connecting link. As its aim is unity, its method is necessarily unification. The two essential processes of this method are themselves processes of concentration, *i.e.* in the first place internal observation, bringing back the mind upon itself, and in the second place, speculation, which is essentially constructive and generalizing. Observation singles out the facts, and speculation supplies the ideas that link them together; but whether it is dealing with facts or ideas, philosophy always proceeds by concentration. On the other hand, so interdependent are different branches of moral science, that excessive specialization is practically impossible. Can we imagine a moralist, a logician, an enthusiast in æsthetics, or a cosmologist, who is not also a psychologist, or a psychologist who is neither a moralist, a logician, nor a cosmologist? Although it may be the fashion nowadays to invite psychology to shut itself up between four walls as if it were a special science like entomology or meteorology, the science of man cannot be thus isolated, psychology cannot be severed from general philosophy and made into an absolutely "independent" study. The mind is not at work only when it is alive, and it lives solely by its relations with the whole world at whose enigmas it guesses, and with the human society of which it is a member; further, it can only live by proposing itself a definite aim, and, *ipso facto*, its life is essentially moral.

The objection may be raised that philosophical and social science will simply be one subject the more, bringing with it an increase in the general intellectual overpressure. If well organized, it would, on the contrary, be a simplification and a co-ordination of knowledge. Its general and synthetic views will give to the modern mind assistance comparable to schematic figures in physiology. If we had to follow the blood through all the ramifications of the veins and arteries, the labour would be endless; the important thing is to know how it circulates, from the heart to the head, and from the head to the heart. The cause of overpressure in the young is not the understanding of the great laws either of nature or of society; nor the acquisition of a synthetic knowledge of the phenomena of the material or human world, but the study of the different sciences in their infinite details, the application of calculation to the study of phenomena, in a word, the dealing in detail with a vast complexity. Guyau therefore rightly maintains that if the study of principles is useful to the higher order of minds, it is much more so to those that are incapable of unaided effort. The average mind may be able to retain a certain number of details, but what escapes it is the broad lines connecting facts together, the framework into which they fit, and the general system in which they find their unity. These broad lines, this system at once simple and extended, will not be learned from a scientific training, even if specialized in a definite direction; philosophical training alone, by widening the mental horizon, can reveal these broad lines to it. If, therefore, the work of boys in these days is to be lightened, the reduction should be on the special and descriptive, and not on the general and philosophical, the moral and social side of modern science; in this case, to add is really to diminish the labour by simplifying and by reducing to order. Thought says Aristotle, is routed, as it were, by a multitude of facts, In war, if a coward refuses to advance, another hesitates, and then another, and then another, and all these individuals thus dispersed make up an army in themselves. Similarly, the general notion fixes the memory; and the rout of thought is prevented by the grouping and orientation of ideas. Philosophy, reducing all truths to their ultimate principles and carrying them on to their conclusions, engraves them simultaneously on the reason and on the memory; it makes the memory rational and the process of reasoning is never forgotten; it is at once a logic and a *memoria technica*. To give to teaching a brain is, in fact, not a complication of the difficulty, but a solution.

Thus from all points of view, whether that of mental exercise or nourishment, or of the supplying a formal or fundamental education, of extending its scope, or of unifying it around its true centre of perspective, of conciliating the observation of the real and the feeling for the ideal, or the vision of what is and the conception of what should be, the spirit of observation and the spirit of speculation, the sense of individual and the sense of collective life, or "modern" and universal necessities—moral and social science must be awarded the first place in education, and especially in French education; and all other subjects must be brought more and more within its reach; we must, so to speak, moralize and socialize not only the study of natural science, but also the study of literature and history. Hence the problem—What are the different branches of moral science which should be taught our youth? and in what order and at what age should they be taken up?

CHAPTER II.

MORAL AND CIVIC INSTRUCTION.

AMONG the moral and social sciences the most essential in the education of our children is that in which instruction and education are more blended than in any other case, *i.e.* morals. Some educators prefer to leave morality to the spontaneous action of reading, conversation, and circumstance; they are afraid of the result of laying down rules, of reasoning out what is good; they believe that morality is not so much learned as inspired, and, as it were, "respired;" that education should restrict its effects to the creation of an atmosphere or moral climate outside which life would be impossible. For this purpose in our higher schools the pupils are kept to literature and history; it is supposed that for this purpose it is only necessary to read a certain number of fine passages from classical authors, or to hear in the words of historians the recital of heroic or wicked deeds, that this will suffice to create in our youth not only literary taste, but the moral sense. This empirical process may indeed be sufficient in the case of a race which is also receiving sound religious instruction and which has kept intact its theological faith; but is it enough in a country like France, in which creeds are in process of dissolution? If every idea, example, or passage read is a suggestion, can it be denied that literature and history do not give a plentiful supply of bad as well as of good suggestions? All these disconnected and contradictory ideas, all these hasty and often opposed sentiments, must eventually combine with the natural tendencies of different characters, with the influences of the environment or of circumstances; but will the final result be good or bad? Sometimes the one, sometimes the other. "Moralizing" our youth is left to providence or to chance. The results of this spontaneous moralization are not very satisfactory; too often this system, or rather this absence of system, ends in spontaneous demoralization. Add to this the substitution of boarding-school life for family life, and ask yourself if Virgil, Horace, Cicero, or Livy will be enough for the education of our youth. For the moral atmosphere to exist, some sort of organization of suggestions must be created; we must be assured that, instead of remaining confused and unconscious, they will be divided into categories perfectly separate, distinct, and therefore comparable; from comparison spring choice, predominance, and order. If, on the contrary, a lad, already thoughtless by nature, is left exposed to every breath of influence, to every impulse whether good or bad, without any exertion of self-reflection, if he can neither resist nor voluntarily consent to the moral impression he receives from without, his will can only be formed in an imperfect, varying, and unstable fashion; and the child will not gain that strength of character which is the basis of morality and the surest safeguard of a nation.

In France it is rare to find a teacher who will introduce remarks on morality into his lessons on literature, history, or grammar! M. Marion has done well in commenting on this in his report; a timidity that is characteristically French checks the expression of moral truths on the lips of "the best intentioned, even the best of our educators." Our modesty is merely a check on our saying anything immoral, and not an incentive to "saying something moral." One of our writers once declared that never during his whole school-life did he hear a single word on morality, except in the philosophy class. And our undergraduates have the same complaint to make. I can, for my part, say the same. I never heard a single moral reflection even on a translation of the "De Officiis." Send a lad to the primary schools in France, and he will receive a course of instruction in morality; send him to a lyceum, and he will hear nothing of morality till he is sixteen or seventeen—if he stays at school so long. And this state of things will persist as long as our teachers of grammar and literature are not moralists, as long as they have not themselves had a preliminary course of morals applied to pedagogy, as long as they have had no philosophical culture, tested by severe examinations. Can it be supposed that a teacher of philosophy would blush to speak, with all the authority given him by science, to children of morality and civic duties, to teach them what they owe to their family and to their native land? The false modesty of which I have just spoken is at bottom, in the case of our teachers of grammar, history, and literature, the modesty of ignorance. This is its only excuse.

For this doubtful chance of spontaneous moralization by literature and history, I propose the substitution of a definite doctrine of life, a scientific instruction in morality. There is a widespread prejudice against morality as a school subject on the ground that it is not scientific enough to be taught. In other words, this is an extension to the whole of morality of the uncertainties which may depend upon the absolute or relative character of its metaphysical principles, just as if we were to extend to geometry as a whole, and to all other sciences, the uncertainties which are due to the nature and subjective or objective character of space, time, motion, and force. The fact is that morality has a positive and perfectly scientific side as well as a metaphysical side. The latter, which is not the least important, should be reserved until the general subject of philosophy is taken up; the former can be and ought to be taken up sooner. The scientific side of morality comprises what Guyau has called the rules of "the most intensive and extensive life both for the individual and for society." There are laws of conservative and individual progress which may be demonstrated; and there are no less certain laws of social conservation and social progress. Life in common has necessary conditions which can be scientifically determined, and the subordination of the individual to the group of which he is a part, to the national community, is one of these conditions. The positive, utilitarian, and evolutionary schools may furnish us here with an ample harvest of facts and laws, to constitute the positive side of morality, the science of manners properly so called, and the science of society. In the second place should come what I call the *æsthetics of manners*, *i.e.* the consideration of the good from the point of view of beauty, and no longer merely from that of utility or social necessity. Finally these should merge, in the higher classes, in the *general philosophy of manners*, which seeks the ultimate basis of the good in the relations of man to the universe, and to the principle of universal evolution, whatever it may be. There is therefore, on the whole, in the moral good both public and private utility, an æsthetic beauty, and a philosophical rationality which may be the objects of transmission to others; in this sense, as Socrates said, "virtue can be taught." Will a child be egoistic when he is shown all that his family, his country, and society as a whole have given him, and are every moment giving him, and all that he owes them in return, when he has acquired a clear idea and a keen sense of national and international solidarity, and when at the same time he will have fathomed the idea of the human being and its peculiar dignity? As each idea is a force—especially in France—the idea of what is best to be done will obviously have a greater power of realization. The ideal, by the very fact of its being conceived, is already realized in our thoughts. Certainly we are none the more convinced that it will realize itself in action, because other ideas and especially other sentiments or tendencies may enter into a conflict with it; but the clearer and more precise the idea of the *best*, the more chance will it have of emerging triumphant from the inward struggle. The outer suggestion of the idea is one of the essential factors in the final resolution. The unconscious factors which make up the character are doubtless of great importance, and it may even be said that reason is composed of (1) unconscious factors; (2) conscious factors; (3) the circumstances of the moment. But the consciousness reacts on the unconscious forces at work within us; it judges them and thereby modifies them. The intellect is not a kind of tribunal external to us, and having to appeal to a foreign power for aid in carrying out its decrees; self-judgment is self-reward, or self-punishment; it is also the beginning of the amendment of one's own character; we have only to set ourselves in the right direction, for certain traits of the moral features to become more salient, while others recede into the shade. The intellect, like all our faculties, aims at self-satisfaction, and if it does not succeed in satisfying itself, we feel a sense of inward discord which may be so powerful as to severely wound us. Now, the intellect has something universal and impersonal about it; it looks at things in a general and disinterested fashion, just as the eye which, in spite of our efforts, lifts us out of ourselves in order to bring into our view an indefinitely extended horizon, lighted up by a light which attracts our gaze. The intellect therefore begins to develop the *ego;* it is, like a look, essentially altruistic. It is also, as Kant says, law-making. It tends to erect everything into a law, but its nature is to lay hold of the law which alone can satisfy it. So natural is this tendency, that we always raise our actions to the dignity of maxims or theories.

Thus the so-called wisdom of nations furnishes "maxims" for evil as well as for good. In a word, we always wish to elevate facts to the dignity of ideas. A fault in conduct is a sophism in action, and as Dante tells us, even the devil is a "good logician." A sound study of morality can alone substitute truth for the sophisms of the heart; it alone can raise the thoughts of a young man to the consideration of his universal ends, to the reflective consciousness of his *national* function—be it scientific or literary—as well as of the relations which exist between that function and the weal of the country, of the whole of humanity. We must therefore introduce into lay education what is customary in religious education—the constant action on the sentiments and also the constant action on the ideas, of a more and more profound study of moral principles and their applications.

In the primary schools morality is taught, but the children in our lyceums receive no instruction in this subject. Is the mere fact of birth and status enough to grant or deny the privilege of learning morality? Or are the teachers in the lyceums less capable of teaching children morality than the teachers in the primary schools? The boys who are going through a "special" course learn morality after thirteen or fourteen, and the girls at lyceums also receive similar instruction. It is therefore only in the case of the "humanities" properly so called that everything is taught but human morality, public or private. This anomaly must cease.

It may perhaps be urged that there are special difficulties in the case of the secondary schools; the teacher will not know if he may pronounce the name of God, or if he may teach at least a spiritual morality. But in reality there is no difficulty. In the programme of "special" instruction we find, "Religious rights and corresponding duties: the *rôle* of the religious sentiment in morality. The sanctions of morality. The future life of God." For the first school examination in literature (B. ès L.) we find, "Religious morality. Duties towards God. God, His existence and attributes. The immortality of the soul." There is therefore no reason whatever why the name of God should not be mentioned in our secondary schools, especially as we read in the syllabus for primary schools, "The teacher is not expected to give a course *ex professo* on the nature and attributes of God; he is to closely connect in the child's mind the *idea* of a first cause and of the perfect being with a sentiment of respect and veneration, and he is to accustom each child to treat with that respect the *notion of a God*, even when presented to it under a different form than that of its own religion."

This wise limitation, which sets in the foreground not a dogma, but an *idea*, a *notion* of God, has been blamed by certain sections; and no doubt fresh recriminations might be expected if moral instruction were organized in our secondary schools. But these recriminations arise because necessary distinctions have not been drawn. The teaching of morals should not be "sectarian," for then it would stifle liberty of conscience, but it does not follow that moral instruction ought to be absolutely without any reference to any philosophical doctrine, nor even that all allusions to the *idea* of God should be banished from it, as is the case with the names of the Virgin, of the saints, of Luther, and of Calvin. And further, in the present tone of feeling with respect to religious matters, far from being opposed to the lay spirit of instruction, general notions on the origin and *rôle* of the idea of God are one of the surest means of sustaining the lay spirit and of combating clerical pretensions. It is, in fact, in order to separate the idea of God from its sectarian accessories that it is important to speak to children of it in a broad and liberal fashion. We must make them understand that this idea of God—this "hypothesis," or belief, if you prefer it so—is not necessarily connected with the dogmas of confession, communion, damnation, etc. By these means the spirit of tolerance, which is so rare among us even now, will be gradually instilled into our youth. But if, on the contrary, we preserve absolute silence on these questions, we give the impression that they are unphilosophical and merely theological, and thereby we let loose in our country all fanaticism, both religious and anti-religious. Even the adversaries of positive religions are therefore defeating their own ends by wishing to proscribe what they call "natural religion," and by accustoming the children to confound (as they are sure to *do of* themselves) philosophical opinions with theological dogmas. Whatever views may be held of positive religions and even of "natural religions," the different forms assumed by faith in a higher principle in the universe have one common basis, whether good or bad, and this basis is especially of a moral order. Now, it can scarcely be maintained that a youth should remain in ignorance of the *reasons* and *sentiments* which are the common basis of different religions in all civilized countries. The avoidance of dogma makes it essential to explain the reasons, the absolute or relative value of which the child in later years will learn to appreciate. Such an instruction is all the more admissible because in all religions and in all philosophies, from Kant to our own day, the idea of God is represented as an object of pure belief or of "faith," principally of *moral* faith, and never as an object of *science* or *demonstration*. It would be even as contrary to religious orthodoxy as to contemporary philosophy to attempt to "demonstrate" the existence and attributes of God as if it were a theorem in geometry or a law in physics. The idea of God cannot rest upon our "science," but, on the contrary, on our theoretical ignorance of the secret of existence, and on our conception of our practical ideal. The ignorance of what *is* beneath everything, with the thought of what *ought to be*, and of what we ourselves wish to find there, are the two philosophical principles of all belief in God. I do not say that these principles necessarily involve this belief as the premisses of a syllogism involve the conclusion, for it would not be then a really "voluntary belief," but these two reasons, sufficient or not from the point of view of pure logic, should be familiar to everybody, and that an education not dealing with the question would be incomplete. The philosophy of religions is, in fact, a part of philosophy, whatever conclusions are drawn for or against the "irreligion of the future." *

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* The author of "L'Irréligion de l'avenir" has admirably said, "Anti-religious fanaticism is almost as dangerous as religious fanaticism. We all know how Erasmus compared humanity to a drunken man hoisted on a horse, and at every moment falling now to the right and now to the left.

Let philosopher and priest each do what he believes to be best, but do not let their rivalry degenerate into hatred or mutual warfare. The philosopher should forget less than others that truth is always relative, especially as far as the ultimate basis of the being, the secret of existence, and the supreme end of life are concerned. If there are myths and symbols in religion, the philosopher and *savant* should recognize that there is also something symbolic, imaginative, and, if I may say so, something mythical in the most abstract conceptions of metaphysics or even of science. And materialistic conceptions are not free from this charge; they are even more open to it than others. In fact, they hold everything to be formed of atoms, *i.e.* of grains of dust, as it were, having representable forms, and these atoms they believe are for ever whirling around in space. There is something essentially mythological about this conception, and rare ingenuity is required before we can believe that this dance of tiny cubes or spheres is the basis of being, life, sentiment, and thought. If religions are anthropomorphic, materialism is hylomorphic, and it is doubtful if it is therefore any nearer the insoluble problem of being. *Savants*, metaphysicians, and priests may all say with the poet—

> "Nous contemplons l'obscur, l'inconnu, l'invisible;
> Nous sondons le réel, l'idéal, le possible;
>
> . . . .
>
> Nous regardons trembler l'ombre indeterminée."

Very often the enemies of religion have committed the blunder of despising their adversaries; this is the worst of blunders. . . . Among well-educated people they sometimes produce a violent reaction against religious prejudices, and this reaction often persists through life, but in a certain number this reaction is followed in time by a counter-reaction; and, as Spencer remarks, it is only when this counter-reaction has been sufficient that we can formulate less narrow and more comprehensive judgments on religious questions, with a full knowledge of the circumstances. Everything widens in us in time, as do the concentric circles traced out by the movement of the sap in the trunks of trees. Life calms us as well as death, and reconciles us to those who do not think or feel as we do. . . . Is there not something fraternal in the thoughts of men?" (Guyau, "L'Irréligion *de l'avenir*," p. xxvi.).

If, then, the human mind is necessarily in the domain of the relative, absolutism is a still more intolerable and more illogical abuse in the philosopher who, while believing he is nearer the truth, should nevertheless remember that he is always translating it into human language, or, strictly speaking, into imagery. Substance, cause, force, end, being, essence, soul, God, and even matter, are so many images, so many metaphors, so many symbolical translations of an impenetrably obscure text. Let us therefore be tolerant, and not object if, apart from any religious confessions, our children are given a vague notion of a God in whom the human race hopes, instead of a notion of primal matter (which is scarcely more intelligible), of substance, or of force. Even to the atheist the *idea* of God is still the loftiest symbol of the moral idea in process of realization in the world and in humanity. And more, the absolute negation of all moral power immanent in the world and guiding it, is but another dogma, at bottom as impossible to demonstrate as theism. Who can assert that there is no moral spring in the universe, that the world, although it has produced moral beings, is in its principle absolutely *non moral*, and even immoral? And, in default of demonstrable truth and certainty, does this doctrine offer so many public or private advantages that it should be taught to our youth? It would be a fine discovery for children and a great encouragement to their teachers to tell them at the outset. The universe is the arena of a conflict of brute forces, unregulated and unrestrained by any moral spring; our ideal of an infinite good is a chimera unknown to nature and never to be realized; the absence of morality is fundamental in nature, and our so-called morality is only a social utility, purely relative to man's ideas! It is clear that the educator cannot teach such a doctrine in the name of the State. The contrary idealistic and theistic belief is that of almost all, with the exception of a certain number of philosophers, or of men whose minds are imbued with philosophical ideas. The latter are not compelled to send their children to the

State schools. And why should the personal ideas of the parent be exclusively respected in those schools, while the general ideas and sentiments of the nation would have no claim to respect ? One of two things must happen—either the child will be educated alone, and then his "liberty of conscience" will not be affected in the least, or he cannot be educated alone, and then how can we be silent on the ideas which have been traditional from generation to generation in the fatherland ? If a parent entrusts his child to the care of the State, he should consent to allow it to be exposed to the common influence. As for those who can bring up their own children, let them teach them as their conscience permits, but let them recognize that they are really only substituting one influence for another.

If the State were willing to abandon all control under the pretence of exclusively protecting the "opinion of parents," thus invested with the dignity of a dogma, we must then proscribe all moral teaching of any kind in our schools ; we must not blame suicide before children, for their father may perchance approve of self-destruction ; nor must we blame free love, for their father may approve thereof ; nor must we speak of public order, the law, and the constitution, for the parents may be anarchists. Suppress the name of the fatherland, and take away its flag, for some socialists look upon the flags of countries as so many differently coloured illusions, and upon the fatherland as a kind of religious idolatry, a metaphysical entity, opposed to humanitarian ideas ; some socialists recognize neither French nor Germans, but only proletariats and their enemies the capitalists. "Our country," to the disabused sceptic is a phrase as suspected of ideology as the name of God, and it is certain that if crimes had been committed in the name of the one, they have also been committed in the name of the other.

I think that the best method of acting on the morality of the young, and that apart from religious opinions, would be to present morality from the civic and patriotic points of *view.* According to the reports of the teachers and in-

Fouillée

Needed by Instructor Davis at 4 p.m.

Hold it up about that time for him to take until to-morrow.

This is the class text-book & they are expected to have copies themselves. Mr. Davis is called on suddenly to give them the quiz.

A.A.J.

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the results of moral instruction, the
s of patriotism have made the most
n the hearts of our youth. Nowadays,
rather to moderate than to restrain
n the children of our schools. In the
ternal discipline and moral education
essential forms of civic duty, and they
pect, be accepted by all. Life in our
uld afford an apprenticeship to national
ool rules should be an initiation into
w, and a preparation for military dis-
t be taught that their native country is
knowing not by blind but by voluntary
ey a law of which their reason recog-
And I think that the whole subject
d in our lessons to the boys on their
y. The national *rôle* of school-life
ited, and idleness must be displayed in
atitude to the fatherland. If we are
mar, speak to them of their country,
nce, and the duty incumbent on all to
raditions. If we are teaching Latin,
country and its relations with the
man literature. If science, tell of the
their country has to maintain, of its
arts, and how they are threatened by
Similarly, we must give a civic colour
s will be the best way of bringing
d lay instruction. What minister of
to the representatives of the State
e of the fatherland of duties to the
all duty in the eyes of the believer is
to one who loves his country, all
to it.*

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* I take the official programme of morals, and with a few slight alterations append it here as a programme of *moral and civic* instruction adapted for English schools:—

I. *The country, the nation.*—What is a nation? A collection of individuals? The true and the false in the theories of the social contract and of the social organism. The solidarity of generations. The national spirit; what constitutes it? Great Britain.

II. *The private individual.*—What he should be in the interests of his country. The good and bad qualities of the English, etc., and especially of the youths of this country. Private virtues necessary to the citizen—truthfulness, courage, work, temperance, etc. Social effects of private vices; their consequences to the nation as a whole.

III. *The family.*—Its necessity to the country; its essential function in the national organism. Its moral and civic constitution. The family spirit; its good and bad effects in this country. Family duties—parents and children; brothers and sisters; servants.

IV. *School, etc.*—Its place in the country. Duties of school-boy to masters and school-fellows. Apprenticeship in civic and moral virtues. Idleness dishonourable because ingratitude to one's country. The classics; their national and patriotic character. Why we learn our native literature. Greek, Latin, science, history, philosophy. Literary and scientific greatness of this country; its intellectual influence.

V. *Relations of citizens to each other.*—Mutual rights and duties. Respect for the human person and for the fatherland in the person of others. Slavery; serfdom; the part played by this country in their abolition. Respect for our fellow-citizens, for their honour. Defamation, calumny. The excesses of the press.

Respect for the creeds and opinions of our fellow-citizens. Religious and philosophic liberty; religious, philosophical, and political toleration. Religious and anti-religious fanaticism; political fanaticism and party rancour; their danger from the patriotic point of view. Great Britain should be united

Respect for the human person in its property. The principles of property. Its necessity from the social, national, and international standpoints. Property in this country. Justice and fraternity. Charity and its various forms. Devotion.

VI. *The state and the laws.*—The foundations of public authority. The constitution of this country. The true and false meaning of national sovereignty. The government. Its different forms; their advantages and dangers. Our good and bad points from the political point of view. Political instability and its perils. The revolutionary spirit.

The army, the soldier. Conscription. Military discipline. Military courage in this country. Our merits and defects in victory or defeat.

Duties of a citizen to the state. Obedience to the laws, payment of taxes, voting, etc Rights of the citizen. Individual liberty; liberty of conscience, liberty of work, liberty of union. Duties and rights of the government. Dangers of authority and anarchy. True and false liberty. True and false equality. Advantages and abuses of the spirit of equality in this country. Increasing difficulty and gravity of social questions in these days.

VII. *International relations.*—International rights and duties. International solidarity. All questions should be considered from the international point of view. Humanity. The love of humanity and its reconciliation with the love of one's country. Patriotism true and false. Humanitarianism true and false.

VIII. *The universe.*—The universal fatherland. Universal sympathy. Love of nature. Duties towards the inferior beings. Man, a citizen of the world.

IX. *The ideal union of minds.*—Creeds relative to a spiritual country and a heavenly city. Kant's "reign of ends." Importance of creeds from the point of view of public and private morality. The respect due from the state and the individual to those creeds in their different forms; natural or moral religions (Kant), positive religions.

The sanctions of morality. Sanctions of the conscience; social sanctions; the basis of the penalty. Creeds relative to a supreme sanction.

Limits of positive science—the unknowable. The modesty of the term *savant*. Metaphysical and moral basis of the belief in an invisible world, and in the final triumph of morality in the universe.

To some programme of this kind, which might be developed for boys between thirteen and fourteen, add the programme of "civic instruction, common law. and political economy" already in use in the French primary schools. Would a course of moral and civic instruction thus present in a more or less elementary but scientific and interesting form, with examples borrowed from history, be useless to boys receiving a classical education, which is at present indifferent to their moralization as school-boys, as men, and as citizens?

CHAPTER III.

HISTORICAL AND POLITICAL INSTRUCTION.

I. If badly taught, instruction in history is swamped by the details of dry and *ipso facto* uninteresting facts.* Well taught, and connected with general ideas, historical instruction becomes an essential part of education. The person with no notion of history is as new to the world as a child, or as an orphan which has never seen its parents. He will lack the sense of human and national solidarity. He also lacks the sense of time—an essential factor in all that is permanent; he will be the dupe of every abstract utopia, improvised and constructed with reference neither to time nor history. The first dreamer he meets will be able to convince him that in his own country and in the world everything can be changed in a day. He has no idea either of historical progress or of historical continuity. The partisans which make the history of France begin with the Revolution, for instance, are either ignorant of history or are deliberately falsifying its teaching. Unfortunately, nothing can be falsified so easily as history. Further, there is much to be said on the question of the "morality of history," as it is taught nowadays, as well as on the question of the morality of nature. M. Lavisse himself confesses as much in his enthusiastic report on the instruction in history (which, it seems, he would gladly substitute for instruction in philosophy). It is not true that the just are always rewarded, and the wicked always punished. M. Lavisse confesses that "falsehood and violence are often successful, and the practical value of their success is not diminished by the immorality of the means employed." It is no longer true that the destinies of a nation can be only explained by its virtues and its vices: "other elements enter into the fortunes and the power of a nation." Too often, in history, "faults are worse than crimes," and they are expiated neither by the men nor by the generations which have committed them. Hence, if there is any morality in history, it is there *incognito*, if I may parody a celebrated *mot*. In spite of these premisses, although history too forcibly resembles the struggle for existence in nature, it is to the teacher of history that M. Lavisse would entrust civic and even moral training. As for the teacher of philosophy, M. Lavisse would willingly relegate him to the universities. If the historian is also a moralist, well and good, nothing is more desirable; but how will he be able to impregnate his lessons in history with morality? That is the question. "There are no panegyrists," answers M. Lavisse, "for confessed scoundrels." Are we quite sure of that, if the scoundrels have succeeded? "The teacher will dwell upon the history of honourable men, when they

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* Take the class in history as we too often find it; we see the same operation of cramming that we have already seen in the science classes; the ideal is the transformation of the boys into phonographs. The following occurs in a note-book: "The new king of France, Eudes (887–898), wished to be recognized in Aquitaine. While he was in the south, a posthumous son of Louis the Stammerer, Charles IV., called the Simple, was proclaimed king in a great assembly held at Rheims. Arnulf, king of Germany, who was also indirectly connected with the Carlovingians and who was still inspired by ambitious longings for imperial power in spite of the 'great protestation' of 887, received the claimant at a Diet of Worms, and declaring himself his protector, ordered the counts and bishops on the Meuse to support him. Eudes prevailed in the end, but consented to acknowledge Charles as his liege lord, giving up to him the district between the Meuse and the Seine. Eudes remained king, but Charles did not become emperor. Eudes died in 898, and Charles the Simple became sole king. Robert, the brother of Eudes, inherited his duchy of France. . . ." Boys will learn these shorthand (or next to shorthand) notes; and will commit to memory the names and the dates. The same will be done for the other reigns. Thus taught, history is the *worst of* intellectual gymnastics.

occur in the lesson." This is a rather disquieting restriction. To tell the truth, the most beautiful and most moral side of history is its legendary side: the Chevalier d'Assas who becomes Sergent Dubois; Cambronne's saying, "La garde meurt," etc. "Literature and science make the honourable and cultured man," continues the eminent historian; "it is history which must prepare the boy for life at a given date, and under definite conditions." And M. Lavisse himself has put into practice this method in the very remarkable books he has published for the primary schools. "Our disasters," he tells our children, "teach us *not to love those who hate us*, but to love our native land before all and above all, and humanity afterwards." We fear that this method of teaching the morality of history—almost inevitable in the mere historian, is only sowing the wind to reap the tempest.

This is certainly not the way to introduce those moral ideas without which history is only a long and blood-stained story of internal and external hatred and strife—the record of the nightmare of humanity. I think that history should be used to establish the positive bases of true social science, and thus alone will it be moral, because it will throw into relief certain moral and political conditions without which a nation can be neither great nor strong. Comte was right when he said that societies have demonstrable laws of "existence or equilibrium" forming a body of social statics, and of "movement or development," forming "social dynamics." Mill gives as examples the following laws which express the minimum conditions of social stability: (1) A system of education including a restraining discipline which is opposed to the natural tendency of mankind to anarchy. (2) The existence of a feeling of allegiance to a common God or gods, the guardians of the State, or to certain persons representing the State, or to laws, ancient liberties and ordinances. "In all political societies which have had a durable existence, there has been some fixed point; something which people agreed to hold sacred." (3) The existence of a strong and active principle of cohesion among the members of the same community or State, which makes them feel that they are one people. And Mill shows that without these conditions a nation is virtually in a state of civil war and cannot, in fact, avoid civil war for long.* History has therefore its morality, not in the sense that tyrants are punished and the good rewarded, but in the sense that there are certain social and political rules which a nation cannot with impunity transgress. Only in social science is the significance and educative value of history to be found. If it be objected that social science is still in a somewhat embryonic stage, the answer is that the few truths already established in its domain are far superior to all applications made without reference to any regular method by professional historians, who, however, are quite content with their applications, and even change from one application to another when dealing with the same facts. Each historian arranges his picture of events as he pleases, and in whatever perspective or on whatever plane he pleases; a history of the same incidents may end in an apotheosis or an anathema.

M. Lavisse hands over to the teacher of history not only moral education, but civic and political instruction. He requires the teacher of contemporary history "to reserve the necessary time at the end of the course to treat *theoretically, but with the aid of facts*, the main questions of the day. What political party does not claim that facts are on its side, and cannot effectively quote a goodly number of facts in its favour? *Physical* facts have a definite significance, but there are historical facts for everybody and for every cause; *pro* and *con* a monarchy, *pro* and *con* a republic; everything depends on the disposition of the facts as of the pawns on a chess-board. There is nothing more unmeaning than most historical facts, unless we make them mean something more doubtful still when we want them to mean anything. M. Taine draws his "little facts" into line and orientates them as he pleases. Orators on each side of the House will draw their arguments from history. History, and especially contemporary history, proves everything and nothing. Even the events of our own age are as yet only documents, the final value of which is uncertain. The history of Napoleon I., for example, is not yet written. Read Lanfrey after Thiers, and Taine after Lanfrey, and draw a conclusion if you can. At the foot of the mountain we cannot see the whole horizon, the relative size and position of objects around us; we must go further up and climb higher. Instruction in contemporary history, being purely and simply a narrative of great events, becomes more and more adventurous; of all forms of instruction it should be the freest from appreciations, and *à fortiori* from theories. It has on several occasions been debated whether it is right to allow the teaching of contemporary history to continue. M. Maneuvrier, among others, is afraid that teachers may awaken legitimate susceptibilities. How is it possible not to stir the heart of our youth when we are telling them of the events in which their friends, relations, and fathers have taken a part? "You have before you the children of the conquerors and of the conquered." We must banish from secondary schools everything that by wounding the feelings of others may give life to the fatal germs of hatred; "let the feeling of comradeship give us in a measure for a few years the illusion of fraternity, and make us an undivided country." I do not think, however, that the course of contemporary history should be suppressed; it is sufficient to restrict it to the exhibition of uncontested and uncontestable facts, upon which it is not possible to have an individual opinion.

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* Mill's "Logic," ii. pp. 520, 521 (Tr.).

II. If contemporary history, taking the form of political doctrine, of necessity gives pain to some, it is because it has necessarily to do with persons, and constitutes, in fact, a *series* of "personalities." On the other hand, pure theory, expounded by a philosopher, can give no pain to those who hold a contrary conviction, because ideas are essentially impersonal. If you are a monarchist, you cannot deny the existence of a theory of republican government; nor, if you are a republican, the existence of a theory of monarchical government. Between the two theories you have a free choice, but, if your choice is to be enlightened and effectively free, it is well for you to be familiar with both. How, then, can a young man or a father, whatever his opinions, object to a teacher's exhibiting in a purely philosophical manner the guiding principles of the various forms of government, the advantages claimed by each, the peculiar dangers besetting them, and the means we may have of gaining the advantages and avoiding the dangers? These are the problems of pure science. Given a democratic government, it is clear it has certain duties to fulfil. Given a republican constitution, it is clear that every man who is at all enlightened and devoted to his country ought to know the principles of its constitution; the revision of that constitution is continually called for by those who do not even know its principles. If we have two Houses instead of one, no doubt there is some theoretical reason, good or bad, in favour of this system, and this system must have prevailed over others. If the President of the Republic is given a kind of *veto* by the constitution (and few Frenchmen know this), and can suspend the promulgation of a law which seems to him to be dangerous, and can compel the Parliament to discuss it again and put it to a second vote, it is no doubt because the idea was to have at the head of the State some one quite different from a President without power and the very humble servant of the chambers. Let us even suppose that the teacher of philosophy lets his personal political opinions be seen, his pupils need take no offence; it cannot hurt your feelings to know that I am a republican or a monarchist. But it is offensive to teach the "history" of the republic and to call all republicans fools or brigands, or the "history" of the monarchy and treat all monarchists as tyrants and traitors to their country.* It follows that nothing is more fruitless than politico-historical discussions. Men cannot agree upon either men, or things, or the course of events, or the lessons to be learned therefrom. Has either learned anything from the other? Not in the least; each leaves off with the same convictions as he began, but often more embittered. That politico-philosophical discussions do not lead to harmony of opinion may also be true; but the minds engaged therein do at least learn some ideas, some of the elements in the solution of the problem, from each other, and each of these ideas will eventually, whatever theory be preferred, have a relative value in the *ensemble*. To discuss the events or the men of the French Revolution, Robespierre, Danton, etc., is so much waste time; to discuss the principles of '89, and the theories connected therewith, and you may try in vain to keep to your own personal convictions in the long run, your opponent's system (even if you do not admit it) must have taught you something. I think therefore that the teacher of philosophy can alone give to elementary instruction in politics that degree of elevation and serene impartiality which is more necessary here than elsewhere; these lofty questions should be reserved for instruction in philosophy at sixteen or seventeen years of age.

Our classical training must always rank below "special" instruction, until both have on their programmes "civic instruction, common law, and political economy." As M. Levisse justly remarks, a boy at the lyceums may be an elector in three, two, or even one year after his school-life is over. Civic instruction is therefore more imperative in this case than in the primary schools. As for political economy, apart from its utility in industry, commerce, and finance, it alone can prevent the boy, when a man, from giving ear to the dreams of any utopist; it exhibits the true relations between capital and labour, the reciprocal value of intellectual and manual labour; what thrift, union, etc., can do. The study of economic and social questions is imposed on all, because, in modern and democratic states, the only way to preserve internal harmony is to decrease misery as wealth increases, and to augment the average comfort. First, in the primary schools, we must introduce and develop the true principles of social economy. It has been truly said that every artisan philosophizes in his own way; we must take precautions that he does not philosophize wrongly. Without such precautions we may be sure that the moral, social, and religious doctrines of the working classes will be the height of the absurd; such a spectacle we see at the present moment. Misdirected fanaticism, the revolutionary utopia, an utterly false conception of life, society, and the State, form the basis of the philosophy of the working classes. To bring economic science within the reach of the masses is therefore a vital problem for democracy. But this is not enough; our middle classes should be familiar with true economic principles. Not by keeping the children of the middle classes in ignorance of economics and social questions can we make them capable of resisting the ever-swelling wave of socialism.

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* *Vide* the "Manuels civiques" of Paul Bert (a *savant* gone astray in politics), and read the outrageous and false description of the old *régime*, followed by the enthusiastic and equally false description of the Revolutionary epoch.

CHAPTER IV.

LITERATURE AND ÆSTHETICS.

I. INSTRUCTION in literature is as much in need of organization and unification as moral and historical instruction. Reform is necessary, but should it be in the same direction as the preceding? I think not. We have seen that reforms in France during the last few years have had a realistic tendency with regard to methods, and a utilitarian tendency with regard to results; first it was proposed to completely suppress Greek and Latin, and afterwards, when the utility of the classics was recognized, it was proposed to give them a practical end. The end which these reformers had in view may be stated as follows: More time for science and modern languages, dead languages to be learned with the minimum of grammar by means of running translations and oral explanations, instead of the written exercises and active methods of the past,—in fact, the idea was to get our boys to read classical authors in the shortest possible time. The object being to make us "know" the literature of antiquity, it was also intended that, in addition to reading the text of an author, the boys should read translations in order that in this way they might, more easily than by running commentary, appreciate in the *ensemble* the full beauty of the masterpieces of antiquity. The leading principle of this new plan was roughly as follows: "We learn living languages to speak them, dead languages to read them." The final result, however, was that modern languages were not spoken so well as before, and the classics were read less. This was because the authors of the reform started from a principle which I have shown to be false. The object of education is not to make boys learn the modern languages for the purpose of speaking—which is, moreover, quite impossible in a school of from three to four hundred boys—nor is it to enable them to read the classics fluently at sight, which is equally impossible. I repeat that its object is the cultivation of intellectual power, with a view to the nation and the race; languages are only the means; modern languages as means are inferior, and lack unity; the dead languages are good means, if they are studied *as literature*.

It was supposed that the German methods were shorter, but this is by no means the case; on the contrary, they require much more time. When the time devoted to Latin is reduced in France to six years and the time for Greek to four, it is forgotten that in Germany nine years are devoted to the former and seven to the latter. What has been imitated, as M. Bréal says (although he was one of the chief promoters of the change), is not Germany, but Belgium, and "all other countries where a classical training is out of repute and powerless."

The fault of the German methods, which, however, M. Bréal considers a merit, is that they are too philological and too prone to consider Greek and Latin as being of value in themselves.*

In all attempts at reform in France the leaders of the movement were philologists and historians, but little favourable to philosophy, with their eyes turned towards Germany, where it seems at first sight that Latin and Greek are only studied for themselves, and are objects of knowledge analogous to those afforded by individual sciences. They criticised coldly and bitterly the literary exercises we held dear, particularly exercises, speeches, Latin verses. The French, it is true, practised the *argute loqui* when they were as yet but Gauls; but this was lost sight of, and to Latin speeches were attributed the faults of the French race, instead of attributing to the faults of our race those of our Latin speeches. The old literary criticism was discovered to be out of date, and for it were substituted, thanks to M. Bréal, philology and history. Children of twelve and thirteen were taught all about the transformation of the tonic accent in words of popular origin; they were taught the history of words taken from the Latin by *savants*, or the history of "doublets." Who knows anything about "doublets" but philologists? and who need know them? Boys of fourteen and sixteen are taught the earliest periods of literature, and they have to learn in outline its origin and the faint outlines of its early history. Under the pretext of avoiding dogmatism in the literature classes, boys' heads are stuffed with names of authors and their works, as if they were to be living catalogues, from Pierre Leroy, Gillet, Chrétien Pilhon, to Raquin, Du Bellay, Baïf, Jodelle, etc. Erudition, historical, literary, and philological, has invaded everything, and all is reduced to mere exercise of the memory. Progress is measured by the number of facts read and learned by heart. This is a false intellectualism, or rather, the futile cultivation of knowledge which is only knowledge. This pseudo-erudition is the ruin of literary instruction; it is supposed that children ought to *know* everything, while the important thing for them is to be able to think and create. They are required to learn fact after fact and language after language, instead of being exercised in the production of something, however small it may be.

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* *Vide* an excellent article by M. Potel, in the Revue des études grecques.

II. I feel that the system of grammatical training and the study of the humanities is the true one, but only if both are properly conceived and taught. Let us begin with grammatical training.

As far as what is in a measure the technical study of languages, it should surely be possible to simplify methods and at the same time to make them more attractive if masters only would take the trouble to try to simplify instead of giving way to the desire for complication. This would not be complicating grammar, but simplifying it and making it of more living interest by connecting its laws with those of the human mind. If a master introduces the history of words when of peculiar interest, and thus makes their history serve as a *memoria technica*, well and good; but there should be an end to the profound treatment of philology in schools. Historical erudition and philology are the two great enemies of secondary instruction; so far from making the ideas more orderly, they only add to the general confusion. From the philosophical point of view, grammar has a moral influence of its own, and if the master only succeeded in making this clear to his boys, they would listen to him with more attention than at present. It has been truly said that precision and propriety of terms are in the commerce of ideas what integrity is in the commerce of things; that there is no complete freedom without a clear mind and exact language. Grammar has even a national and patriotic side; in every detail of the structure of a word, and in the peculiarities of the orthography which is now being attacked,* grammar, instead of confining its efforts to simplification, shows us the vestiges of certain fashions our ancestors had of speaking, pronunciation, and writing; and as it makes every word, as it were, a revelation from the venerable past, it makes these words sacred to us. "It teaches us to scrupulously respect the sense which is confirmed by use, and which is, as it were, the soul of the word; it makes a language that is pure and faithful to etymology and tradition appear as homage to the national genius; and we see that it is perhaps an act of filial piety to accommodate our thoughts, although the substance may be new, to forms with which the vigorous and healthy thought of our ancestors was content." Thus writes a philosopher,† and a little of this philosophical elevation would do the teaching of grammar no harm. A literary language should be a perpetual suggestion. Every word on the sense of which the child is compelled to reflect, every combination of words, every phrase of which he has to analyse the structure, should awaken in him ideas and sentiments. The positive mind prefers facts, and looks with comparative contempt on words; but, even if some words are empty, the majority are the summary of innumerable facts—not only natural, but social facts; a word is a product of human society added to nature.

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* M. Boissier. *Vide Journal of Education*, July, 1891.

† M. Burdeau.

And, in particular, the study of the poets will be found to have an evocative virtue, and there is good reason for giving the first rank, as it should be given in the education of our youth, to the poets. Even grammar would be more interesting if it were made more literary and more poetical. The very examples may be borrowed from beautiful verses or phrases from the best writers; they may thus represent real works of art, and the child will very soon acquire a sense of style, *i.e.* of beauty of form. He will read these verses again and again, and each will be associated in his mind with some rule of language. He will see why a certain phrase from "Bossuet" or "Pascal" is considered fine, and that even the correctness of this phrase, its grammatical logic, and its conformity with the genius of the language, are the basis of this literary beauty. The study of a language should not be considered as a barren study of words for the words themselves; it should even at this stage have an æsthetic value. All words are, at bottom, metaphors, figures obliterated by long usage, and misunderstood from the habit of using them. And further, the associations of words are really *myths* in which personifications of ideas are brought into action and mutual relation; a phrase is a symbolic history; the most familiar expressions enshrine a mythology which is gradually disappearing, as would at once be seen if we put capital letters to even the most trivial words: "Terror *strikes* me; the Sea *beats* on the rocks; the Wind *blows* furiously; the Storm *threatens* us; the Sun *hides himself* behind the clouds." Language is "fossil poetry," petrified mythology.*

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* Emerson, "The Poet" (*Tr.*).

Finally, grammar has its logic, as the teacher must show his pupils. The naturalist school in pedagogy—which dates from Rousseau and Pestalozzi, and with which Bain and Spencer have many points in common—has a peculiar dislike to logical abstractions. This school will hear of little else but the intuitive method, teaching by sight; to it everything reduces to seeing and inferring. Hence its profound contempt for the study of languages and grammar, especially for such grammar as is learned by "rules and principles," such as Latin and Greek grammar, instead of "by use," as they naïvely fancy they can teach the modern languages to the young—learned with the bandage of unconsciousness over the eyes. This pseudo-naturalism is based upon a false analogy: acquired knowledge is not spontaneous and is not the effect of a "necessity of existence;" properly speaking it is not a "natural fact," but an artistic and logical fact. We have seen that an ancient or even a modern language cannot be learned as we learn the mother tongue. If too much reasoned-out grammar is harmful, a moderate use of it is far more adapted than even mathematics to develop the reasoning powers, reflection, and perception of the mutual relations of ideas.

"To make out the meaning of a scientific proposition," says Mr. Bain, "to find the rule that fits a given case, we must try and try again; we reject one supposition after another as not consistent with some of the conditions of the problem, and remain in patient thought until others come to mind."* Such is the intellectual gymnastics Mr. Bain offers us instead of the gymnastic of languages. How is it that Mr. Bain does not see that in describing exclusively the scientific method, he is at the same moment describing exercises in grammar and composition? Do we not in the latter case find the rule or principle applying to a particular case, try and try again, "reject one supposition after another as not consistent with some of the conditions of the problem, and remain in patient thought until others come to mind"? The child is even obliged to employ all these processes in the simplest exercises in grammar or in the logical analyses of phrases. As for more difficult exercises, they may all be reduced either to the understanding or the expression of thoughts; now, to understand, and especially to express, we must reduce the ideas to their elements and then note the interconnection of the elements; and these are *par excellence* the two intellectual operations—analysis and synthesis.

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* Bain, "Education as a Science," p. 370 (*Tr.*).

The whole of scientific and literary invention reduces to these operations, the one much more special, and the other much more general and therefore more adapted to the training of youth.* Let me therefore repeat that exercises in languages are a much more certain criterion of intellectual vigour than the solution of problems in algebra or geometry. Generally speaking, if we want to make a *savant*, we must begin by making an intelligent man, and for the development of the intelligence there is nothing equal to the study of languages, especially of ancient languages.

III. If we proceed from grammar to literature, we see it is necessary to reform the general spirit. To give to literary training a really æsthetic value, we should make a more deliberate and careful choice of our models, confining ourselves to the finest passages which, as M. Ravaisson says, teach us more in a short time than others would do in a longer time. Let us take the masterpieces in the most important styles or carefully selected fragments which are in themselves masterpieces. Everything that is mediocre should be avoided; nothing should be retained but what can excite admiration; as soon as the pupil ceases to admire, his masters lose their hold on him. The teacher, on the other hand, should always show by analysis and criticism the beauties of the passages selected for study. Instruction, in a word, must always be æsthetic and never mechanical. Banish rigorously all mere effort of memory, and all the literary and historical erudition which we have been unfortunate enough to envy in the Germans. It is supposed that everything that can be done is done when many *true* and many *useful* things have been taught—that is the schoolmaster's ideal. But it is the beautiful that should be taught in preference to all else.* It follows that in classical education, as well as in poetry, all styles are good as long as they are not tedious; not because we have to "amuse," but because we should "interest" the pupils, and saturate their minds with the sense of the beautiful. Whatever is really tedious in literature and in history is really far more so (and therefore out of place) in education, for it is only lifeless abstraction or erudition. It is far better to choose what should never be forgotten.

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* The scientific operations described by Bain are either the methods of discovery (which is not usual among boys), or those of mathematical problems, which are only of use in mathematical and physical science; and in addition to this they form an individual habit which, as we have seen, tends to become mechanical in most boys. Those who solve a problem are not always the most remarkable pupils; chance plays an important part in the solution of problems, because you may attack the problems the right way at the first trial; and we must also take account of the automatic mechanism of algebra, which is a kind of mill for grinding out equations.

In our days the "centre of gravity" of a literary training is generally placed in explanations of authors, and it is supposed that the master's remarks, with the spontaneous reflection of the boys, will be enough to develop in them the literary sense. But I think that translations and running commentaries, which are so strongly urged by the would-be imitators of Germany, are but auxiliary means. The boy's own translation of a passage from "Homer" or "Virgil," if it has been conscientiously, slowly, and carefully made, is of far more value in his intellectual development than a running translation by the master of a whole book of "Homer" or "Virgil." It is of small value for a boy to be able to give a summary of the "Iliad" or the "Æneid" as he would of "Telemachus" or "Gil Blas." Whatever M. Bréal may say (who supposes that we learn Latin to become Latinists), I prefer a good Latin or Greek exercise to a running translation—or still better even a few Latin verses of average ability, written by the boy himself, for they will have much more influence on his education than even the verses of Virgil.

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* *Vide* Book I.

According to M. Lachelier, the fundamental exercise should be the explanation of the Latin text, not a running translation, it is true, but a sound translation of it by the master, coupled with a running commentary. "It is a question," he says, "of learning grammar to be able to read Tacitus and Virgil, of reading Virgil to learn a love of the country, and Tacitus to understand the motives of Thraseas and Helvetius Priscus." If this lofty eloquence did not disarm objection, we might suggest that reading Virgil is a rather roundabout way of getting to love the country, and that to grasp the motives of Thraseas it is not necessary to read the history of this great man in the Latin text of Tacitus. Besides, after thus maintaining that languages must be learned so as "to gain the enormous number of moral notions of infinite shades and variety expressed by these languages," we must confess that the knowledge of a multitude of words is not necessarily the possession of a multitude of thoughts. After saying that we cannot read the great writers of antiquity or of modern times without learning an enormous number of facts, "about all that mankind has done, thought, or felt, in the principal periods of history," we are still compelled to recognize that in reality pupils read very little of the texts at which they work hard to acquire the key. The French authors themselves, as M. Rabier bears witness, are perhaps even less practical than Greek and Latin authors. "In fact, if we count up all the pages, Greek, Latin, and French, which have been read and explained in a whole course of study, we could hardly make up a volume as thick as one's finger." And even when more is read, the notions acquired would always remain fragmentary, detached one from the other, and, so to speak, anecdotic, because in this labyrinth the guiding thread is missing. History is not enough to furnish this thread, for as it is taught at present it is a mere series of facts. Instruction in literature must therefore be, not an historical inventory, nor idle philological curiosities, but a literary and artistic doctrine; it should be æsthetics at once felt, reasoned out, and applied. How can the young be interested in the works of the great writers, even when replaced in their historical environment, if they lack the guiding ideas—and, if I may say so, the principles—either æsthetic, moral, or social, which give life to every reading, and give it an end and a significance? Now, everything that resembles any doctrine whatever, I do not say dogmatic, but free, open, and even conjectural, has been banished from our system of instruction. But this doctrine would, I feel, be the real and only "centre of gravity;" to have ideas, a literary opinion, a moral and social creed, a general view of Nature and her mighty laws, and then to coordinate by means of all the other ideas, the facts of science, history, and art; to simultaneously introduce order into and give direction to the explanation of authors; finally and chiefly to be exercised in the expression of ideas and sentiments, in the composition of small but tasteful or logical essays, in the putting of thoughts into action and form under the constant control of the classical models; that would be the daily round in secondary instruction where now not only languages are dead, but also ideas and sentiments.

In my opinion we must also revert to the active methods which form an applied æsthetics, for passive methods are but mere storing up in the memory. You cannot learn to think, to compose, and to write, by a mere scampering through literature. Put a pen in the hand of the youth as you place a brush in the hand of the future painter, and see what he will do for himself. He may write a bad speech or poor verses; what does it matter? the speech or the verses have been more useful to him than even those of Cicero or Horace, because they have exercised his mind. You might read "in Catilinam," or the "Ars Poetica" ten times over, and yet have made far less progress than if you had written Latin speeches full of barbarisms, or limping Latin verses. If you have occasionally thought of a passable argument, or, in verse, of a true image, a correct epithet, or a nearly harmonious hemistich, your couplet at which linguists and philologists may shrug their shoulders, will however mark in you distinct improvement and æsthetic progress. And, after all, as you are not to be a Latin orator or poet, there is no necessity to pay over-attention to solecisms, if you have done your utmost to avoid them. We are agreed that the mind is an instrument and not a "museum of antiquities," therefore we must strengthen this instrument by exercise. The whole history of French literature up to the eighteenth century, upon which our boys have to dwell at length, is not equivalent to a single story told by the child, without concerning himself about the "Fabliaux" of the Middle Ages, or the "Satire Menippée"—a story in which he has set to work to give sequence and form to his ideas, however humble they may be. The lad who can write Latin and French correctly has no need to know in detail the origin of our literature; if he himself creates part of the literature of his country, and becomes a living link in its classical tradition, he is doing far better than he would do if he simply learned its history, far better than if he is acquainted with Pierre Leroy, Gillet, Chrétien, Baïf, and Jodelle.

I confess that I infinitely prefer literary results which are at the same time intellectual, to the philological results which M. Bréal prefers in imitation of the Germans. Do not let us substitute erudition for literature and art. Latin and Greek must remain the instruments of the national mind, instead of being raised to the dignity of "ends in themselves," of objects to be known merely for the sake of knowing them. If classical instruction were only one subject more to be acquired, it would soon have to be sacrificed for the other subjects of knowledge, which are, moreover, constantly increasing in number; but, as we have seen, the truth is that instruction in Latin should also be instruction in the mother tongue, *i.e.* a culture of the national spirit and literature by means of the mother tongue.

In America, says Guyau, instead of showing children how a steam-engine works, a miniature model is given to the child; "he then has to take it to pieces, put it together again—in fact, he re-makes the machine. When this is done, he knows it well." Now work such as this has a parallel in the written translation of literary masterpieces, in the "version" and the exercise, with the simple difference that in the former case we are dealing with material things, and in the latter with things of the moral order. Translation is better than teaching "at sight," because it teaches by action. We get very inferior translations, or Latin speeches, or Latin verses—those copies which are the despair of the masters, and which become an argument for the enemies of classical training. Well; read them without the pedantic prejudices which make barbarisms and solecism the capital sins *par excellence;* condemn faults of language, pay exclusive attention to the pedagogic and æsthetic side, and you will find that even an exercise full of blunders may nevertheless contain some details which show evidence of intellectual effort or sometimes even of a certain taste. The simple fact that five minutes have been spent on a passage of Virgil in the endeavour to understand it and translate it, implies æsthetic progress.

"Ibant obscuri sola sub nocte per umbram."

These seven words bring before the student a picture which has to be copied. One writes, "They advanced alone in the dark night;" another, "They went, in the dark, in the lonely night;" another, "They went into the darkness in the lonely night;" or—"They went, into the darkness and solitude of the night;" "They went enwrapped with darkness into the lonely night;" "They went enshrouded by the gloom into the lonely night;" "They went, enfolded with gloom, through the shade into the lonely night!" Good or bad, each is a work of art; all have had to fix their attention on a nocturnal picture of simple beauty and easily grasped, on an outline, so to speak, which they have had to copy. Even if the rest of the passage were entirely wrong, these seven words, if understood and more or less badly rendered, will have awakened the sense of the beautiful. Now, the sense of the beautiful is what makes a man worthy of his name; everything that may develop that sense is therefore more important than this or that definite knowledge of literary, historical, or even of scientific facts. It is of more importance to humanity and even to the individual to have a craving for the beautiful than to know philosophy or the history of the Pharaohs, but the mind that feels a craving for the beautiful is on the way to become a beautiful mind.

MM. Frary and Bréal, writing of poetry and eloquence, call these studies "artificial exercises" in versification and rhetoric; but are these studies entirely artificial if considered in themselves? Each of us has in him the germs of poetry and eloquence; he is to be pitied who has not in his time been a poet, even if only swayed by the sense of the ideal; so, too, must we pity the man who has not become eloquent under the influence of some ardent and generous emotion. Poetry makes us penetrate into the very soul of things, and eloquence enables us to act on other minds. No father, mother, or lover has ever been unable to find in his own heart accents that could reach the heart of the object of affection. To develop this sense of the ideal and this power of persuasion which are natural to man and tradition in France, is to understand education not only as the French but as all nations have always understood it, for from India, Egypt, Greece, and Rome to modern times, there is no nation which has not made poetry and eloquence the base of literary education.*

The only drawback poetry has ever suffered from is its difficulty. But, in my opinion, the young man who has never composed a verse, who has not attempted to give to thought and sentiment the higher form the ancients called divine, has not received a really liberal education; he will never be able to thoroughly appreciate either the beauties of the great poets, or the poetic harmony of the great prose-writers. Besides, prose, to be kept to its true level, must have before it the rivalry of poetry, which, exhibiting a loftier ideal, keeps it from descending and becoming flat. Sainte-Beuve, irritated by the attacks on Latin verses, wrote, "Nothing has done more not only to exercise my taste, but to mould my intellect." †

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* *Vide* M. Maneuvrier.

† Verses have been sacrificed on the pretext that the boys generally made false quantities. I repeat, take the worst copies; you will find here and there a passable and sometimes a happy epithet, which will cover a multitude of sins; for instance, the following heptameter is bad, but it shows a poetic conception. Speaking of an Alpine excursion, the boy writes, *Aeriâ sat pace sedens immensum contemplatur.* Now, although a bad line, it is of more value in general culture than having learned the preparation of hydrochloric acid, or the names and dates of the battles in the reign of Louis the Fat. Another pupil, in a piece full of solecisms, compares a glacier to the waves of a motionless sea: *Immotum mare stat.* Another writes of the mountain-peaks gradually emerging from the mist at daybreak: *Montes e nocte resurgunt.* Another: *Meque deo propius credo, atque hominem obliviscor.* Another recalls the *immensa silentia montis;* another does it in two words: *mons silet.* Boys, good or bad, have here made an imaginary ascent; the idlest of them have tried for at least five minutes to express some idea or other in poetic form; and in the dead languages a simple line may conjure up a whole picture. What do faults in versification matter? In the mother tongue they would be intolerable; when we are speaking our own language we are not allowed to profane it, and accuracy is a supreme virtue; but the dead languages have the merit of allowing philological sacrilege.

After giving up Latin verses, the reformers substitute "metre" in their place, and give learned lectures on the metre of Plautus!—again a mere imitation of "German science."

M. Bréal regrets that in reading Virgil boys "mentally compose a

As for Latin speeches, from the philosophical point of view, they should be an attempt to express the sentiments and words appropriate to persons and situations; they should be at once applied psychology and applied poetry. The boy is ridiculed for always making Cæsar or Brutus his spokesman; but everything depends on the manner in which he makes them speak. Did not Shakespeare, in making Brutus and Cassius address each other, compose a masterpiece, not only from the point of view of the pleasure his work gives us, but because of the light thrown by his subtle psychology upon the mind of nations and of mankind? No doubt a school-boy will not do so much, but if he throws all his attention into doing something analogous to this, will he not thereby enlighten his own mind?

It is true that we must be more strict in our choice of subjects, and of the methods of treatment. It is especially in rhetoric that the philosophical spirit is absolutely necessary. Badly conceived and badly taught, speeches become the art of substituting words for reasons, of warmly pleading for a cause that leaves us cold, of maintaining a cause which one does not believe to be true; of throwing off one's own characteristics and wearing a mask; it is the paradox of the comedian realized by the orator as well as by the actor. We get accustomed to treat the *pros* and *cons*, not with a desire to find the real reasons for and against, which would be legitimate enough, but with a desire to deceive others. Gods and men, ancients and moderns, kings and tribunes, captains and magistrates, are made to speak in an unreal and false manner, and boys are forced to write of subjects which have never been carefully studied; it is the renaissance of Greek sophistry with all its subtlety, but without the analytic spirit and deductive vigour. The two types with

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poetical dictionary for personal use." I see no disadvantage in this; it is even the only way of making pupils see the delicacies of Virgilian versification. On the other hand, a mere oral translation will never enable the pupil to grasp them. In fact, the Germans translate much more Virgil, and understand it much less.

which this education of the orator supplies us, are its living personification: the vulgar orator and the vulgar journalist who talk on any subject and know none, and who solve any question by bursts of eloquence or by epigrams. To prevent this unduly formal teaching of rhetoric, we must give the mind sound knowledge of the moral and social order. If, at fourteen or fifteen, boys receive a sound training in morals, at fifteen to sixteen in æsthetics, literature, and the history of art; if critical and philosophical questions take their place in their lessons in history; and if into their training in science general questions of the philosophical and historical orders are introduced, how can our boys lack ideas when they take up rhetoric? Cannot their teacher then find for them really serious questions to write upon, instead of mere declamations and oratorical display?

I think that the exercise *par excellence* is composition in the mother tongue on some subject in literature, philosophy, or history. We should accustom our boys to attempting essays of this kind at their leisure, the subjects being, of course, chosen with the approbation of the master. Time should be given to write a sound and well-thought-out essay, the books best adapted for consultation should be indicated, and the principal points upon which the authors attempt to throw light. The idlest boy would be encouraged to work if, after his researches, he succeeded in reducing to order a few ideas, and in sending up a composition with some part or other of it well done. In this way he would really learn how to "study." And, as Stendhal says, study gives us a daily meed of happiness; and if it is given an object, for example, "Give a clear idea of the Gunpowder Plot," the most insipid book becomes interesting; and this interest increases in time and persists long after "the Gunpowder Plot" has been thrown aside.*

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* The Latin essay, sacrificed nowadays with all the rest, has its own advantages. When we write in the mother tongue, the work seems too natural and spontaneous; we do not sufficiently realize the difficulties, nor do we readily grasp the processes which will solve them. When, on

If the teacher of philosophy, or, failing him, the teacher of literature—after having received a better philosophical training—were to speak to the boys of the different theories of the beautiful, the sublime, the graceful, the object of art, of idealism and realism, of the classicists, romanticists, and naturalists; of poetry, sculpture, painting, architecture, music, etc., and that, too, with the aid of prints, photographs, or casts, which would be real lessons in things; with the aid also of those other lessons in things afforded by a well-selected passage from Virgil or Tacitus, Racine or Hugo, would boys take no interest? would they not draw from their lessons more pleasure and more profit than by the purely historical and philosophical method?

We do not want the master to teach his boys the mysteries of metonymy, prolepsis, syllepsis, hypotyposis, hypallage, hyperbaton, antonomasis, catachresis, synecdoche; and we are right to let these flowers of rhetoric "wither in peace in botanical collections." But is a course of literature, and even of very general æsthetics, a study of catachresis or antonomasis? We must not confuse the philosophical with the didactic spirit; philosophy establishes principles and formulates laws, either certain or conjectural; the didactic method professes to furnish precepts and receipts; and philosophical views are just as interesting as the precepts of rhetoric are dull. But it is unfair to banish all didactic method from instruction, because there are rules in writing as well as in painting and in sculpture. It is not—solely,

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the other hand, we have to express our thoughts in Latin, we have to stop, reflect, make a choice, turn and return every idea and phrase. "To learn how to reflect," says M. Boissier, "is the first and most difficult science presented to a child. Once it possesses it, it can apply it both to Latin and to the mother tongue, and so it finds it can write its own language without have learned to do so." That was the case with Descartes, Bossuet, La Bruyère, and all the writers of the seventeenth century. But as our boys no longer write in Latin *so that they may write better in their own tongue*, they write their own language worse and worse. Teachers of philosophy at the secondary schools in Paris complain that they are compelled to teach everything to boys of sixteen and seventeen.

at any rate—by reading the history of painting that painters are made.

I should also like to see boys not confined to literature, but introduced to the other arts. Here, again, the woman will some day be able to instruct her husband, for the syllabus in our girls' schools contains a history of art, "mainly practical and accompanied by visits to museums and monuments." But the syllabus is far too historical, and should be more properly æsthetic; the girls are here, as elsewhere, swamped by a mass of erudition. What is understood by works of art? Main divisions of the history of art. I. *Antiquity*. Egyptian and Assyrian art. Greek art. Archaic Greek art. The age of Pericles. The age of Alexander. The great schools of art in the Greek world after Alexander. Etruscan art. Roman art. How Rome learned Greek art. II. *Middle Ages*. Christian art at Rome. Byzantine art. Arabic art in Syria, Spain, and Egypt. Roman art. Gothic art in France, Germany, Italy, Spain, England. Civil architecture in the Middle Ages. . . . "And why not military architecture?" As a matter of fact, it does figure in the syllabus. "Military architecture in the Middle Ages!" III. *The Renaissance*. Its origin. The Renaissance, principally in Italy and France. The different schools. Art in the seventeenth century (France, Flanders, Holland, Spain). Art in the eighteenth century (France, England). Art in the nineteenth century. Why should not the stronger sex share in this initiation into the arts? Perhaps even future soldiers might be interested in the "military architecture of the Middle Ages." But the elementary study of the principles of the different arts and of the most celebrated masterpieces by means of prints, photographs, and casts, would be worth more than all this history. Finally, with M. Maneuvrier, I should like to give to classes halls of study, and to places of union and recreation an agreeable and artistic appearance. In these days we can reproduce at but small expense the masterpieces of drawing and sculpture, either by photographs, or photogravures, or by the aid of magic-lanterns. Art, as is commonly said, has been brought within the reach of all. Why not profit by this progress to decorate our schools, so that, as M. Maneuvrier says, "the very walls may speak and teach"? In this respect primary instruction is ahead of secondary. Especially in our lower secondary schools would a good instruction by sight be profitable, if joined to the lessons of the master and to instruction by action. Did not Plato say that youth should be surrounded by only beautiful things and beautiful works. This, then, is a legitimate application of the laws of suggestion and sympathy. The memory of the child becomes pliant without an effort to the forms of language which it hears around it, and which are, as it were, spoken logic; so, when children are surrounded by everything which awakens the sense of beauty, their minds are spontaneously fashioned to æsthetic forms. "They become like the object of their contemplation."

To sum up,—we only know of one way to organize and unify the study of literature, history, and science; namely, to introduce the philosophical spirit therein from beginning to end. Philosophy is the study of both man and human society which are precisely the great object of literature and history. In an age abandoned to the conflict of interests, in a society in which the necessities of life are ever increasing, how can we expect children to follow us through Latin, Greek, ancient and modern history, literary history, etc., if we do not constantly keep before them the end in view, and a noble end, if there is not in a measure some morality visible in each lesson, a relation between the good of the country and of the individual, an æsthetic interest, an attraction for heart and mind alike, and therefore an excitation and a strengthening of the will? This would make our work education and not merely instruction. If in our schools we are on the whole reduced to instructing instead of "elevating" our youths, it is because moral and social training, neglected for the first seven or eight years of school-life, are suddenly introduced at the end when it is too late. If a better-conceived instruction combines literature and science with a moral, social, civic, and æsthetic training, literary form will have a substantial basis; there will be no need to ask for ideas, we shall have to reason them out and be enthusiastic over them. On the other hand, the study of the exact sciences and of natural science will take a less abstract and more social direction; it will be *humanized*.

CHAPTER V.

INSTRUCTION IN PHILOSOPHY.

I. In Germany, classical studies do not terminate with the "Maturitätsprüfung" at the end of the course of the secondary schools; this examination is simply a matriculation examination for the universities, at which it is traditional to continue the work begun at school. Thus philosophy may be thoroughly studied, for the pupils have only learned the elements of this subject in the gymnasiums, although there is far more philosophy taught in the German than in the French schools. They have even retained the name of philosophy as covering science, and their doctors are called doctors of philosophy. But in spite of the complementary course at the universities, it is much to be regretted that a complete course of philosophy is not given in the gymnasiums. The only extenuating circumstance is that, Germany being very religious, religion assumes the burden of metaphysical and moral education.

If in France we were to defer the philosophical course till the pupil enters the Faculties, it would simply mean the suppression of the Faculties. We must take the French as they are, and not try to bind them to a pseudo-Germanism. Our classical training should therefore end for all boys in a complete and regular instruction in philosophy.

At present it is freely admitted that our philosophy is undergoing a process of evolution; and this to class-work in philosophy is both a drawback and an advantage. The drawback—which would be lessened if our system of instruction were more simple and more elementary—is a certain confusion, springing from the very wealth of ideas, and also from the uncertainties which still exist on many points. The advantage is that it presents to the young mind life, progress, and the fruitful working of ideas. The master carries into practice in the presence of his boys that search after truth in which Malebranche saw the most divine use of human reason; they observe the working of the master's mind, and therefore exercise their own minds in thought. Besides, says M. Lachelier, it is a great moral advantage for boys to feel that the master only tells them what he believes to be true, and that they must only say what they themselves feel to be true. "Our classes in philosophy are, nowadays, above all else—a school of sincerity."

M. Maneuvrier asks that two years should be devoted to philosophy. M. Lachelier says, "I should like two years to be set apart for philosophy instead of one, and I should only ask for pure philosophy during those years, one-third of the time at present allowed; there would then be time for a sound and wide scientific training."

In Italy, according to the new programmes, boys are taught "descriptive psychology" in the first year, consisting by preference in "the enumeration, classification, and analysis of fundamental psychical facts, and in the explanation of their experimental laws." The next year they go on to "formal and traditional logic, confined as far as possible to points on which all schools of philosophy are agreed; and to this is added the theory of induction, and of the experimental method of modern research, with appropriate exercises and applications." The last year is devoted to the highest questions in philosophy, mainly to questions of private and social morality, the principles of law and politics, "the study of representative constitutions, and notably that of Italy." To these are added elementary notions of æsthetics, and the history of philosophy. Metaphysics are eliminated.

Should metaphysics or general philosophy be excluded? I reply in the words of M. Angiulli, an Italian philosopher, "Whatever cannot be separated in the progressive unity of a science, should not be separated in the progressive unity of instruction." To say that secondary instruction should only include what is proven, by excluding what has simply a hypothetical value, is to deprive it of its greatest educative power. If hypotheses were excluded from instruction, we should, as Haeckel rightly remarks, be mutilating every science. The important thing is to present hypotheses as hypotheses, and not as demonstrated theories. Moreover, the highest and most disinterested parts of philosophy are also the finest. I do not attach as much importance to "psycho-physics" and its experiments, or to logic and its abstractions, as to the great theories of nature, man, and first principles. We must guard ourselves against taking positive certainty as a measure of *educative* virtue. It is precisely because general philosophy is not a positive science that it has a greater moral and æsthetic value. Certainty is not of the first importance in mental education; we live and act, as a rule, in the midst of probabilities, and Leibnitz was right when he said that appreciation of probabilities ranks higher than appreciation of certainties.* The object that instruction should keep in view is not the solution of every difficulty, but the keeping of our youth, by a method which is neither dogmatic nor sceptical, in touch with controversies in which they will necessarily take a part when they enter into the life of the community. The problems of general philosophy are, moreover, intimately connected with moral and religious problems; the young man cannot leave school without a criterion, without ideas to guide him amid the opposing influences at work in modern society. Secondary instruction should, therefore, sketch in, on the background of science and literature, a doctrine of science and of life, filling in afterwards the consideration of the ultimate problems of existence and conduct. The philosophy of first principles alone brings the mind face to face with these great problems; it alone gives, on more than one point, the sense of the insoluble, which is more important than many scientific solutions, because it is the sense of the sublime. Above what the English call "cosmic emotion" is the philosophical emotion which is the basis of the moral and religious sentiment.

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* "Nouveaux Essais," iv. ch. xiv. *De la probabilité.*

The spirit of the philosophy of first principles in instruction should be, and in fact is, in France, conformable to the enduring part of the Kantian criticism. Hence it must show the limits of knowledge. Upon this all philosophers will be agreed; positivists will have no ground for objecting to a system of instruction which gives a legitimate place to some of their principles, proving them, however, by analyzing the conditions of knowledge—which they themselves do not do. The adherents of the various creeds will no longer object to our laying down the limits of human knowledge, because it is precisely beyond those limits where their faith begins. As Spencer says, the mysterious in the old conception of the universe is added to the new interpretation. The nebular hypothesis throws no light on the origin of diffused matter, and diffused matter must be accounted for as well as concrete matter. The genesis of an atom is as difficult to conceive as the genesis of a planet.

To this critical side of philosophy we need not hesitate to add a positive and constructive side; but what should it be? The essential point, in my opinion, is that it should not be materialistic. In fact, we consider that the inadequacy of materialism, as a sufficient and complete explanation of the universe, is fully demonstrated. None but the incompetent can accept the materialistic dogma, and believe that brute atoms put together in a certain way, like the parts of a machine, eventually form something that thinks. Materialism has succeeded in defining neither itself nor its first principle—matter. The greatest benefit a philosopher could confer on it is to put it in logical form; and then we see it can be summed up in two lines: All is matter, but we do not know what matter is; being = matter; matter = x.

In Germany, England, and France there are no materialists among philosophers worthy of the name and *au courant* with the Kantian criticism; only among *savants* are they to be found, and the reason is that the *savants* do not know philosophy. The positivists and evolutionists, from Comte and Littré to Spencer, have always stoutly maintained that they were not spiritualists, and *à fortiori* that they were not materialists. No one can object to a critical examination of the materialistic dogma taking a place in philosophical instruction, as it has done in our own days.

This granted, I go further, and ask for a place for idealism in the education of our youth. I cannot understand a real education apart from an ideal, without a certain influence attributed to that ideal in the progress of humanity. Idealism will only be a "chimera" when materialism has been sufficiently demonstrated; but all that has been at present demonstrated about materialism is its inadequacy. No one has, therefore, a right to assert that the ideal conceived by human thought is in essential and eternal opposition to the very basis of reality; for who knows this basis? whose conceptions are as vast and noble as those supplied by "nature's ample bosom"?

The general criticism of science and its conditions, the detailed criticism of materialism, and finally, the possibility and legitimacy of an idealism reconcilable with our very knowledge of nature, are the three fundamental points of a system of instruction in conformity with the requirements of modern philosophy. The teacher may either confine himself to these three points, or add to them his own personal convictions. Whatever they are, if based on these three incontestable theses, they will have that degree of elevation and sincerity which are necessary in an instruction that is to be educative. The philosophy which I propose to establish on this basis is not an "official" philosophy, but rather a scientific philosophy, inasmuch as it summarizes the work of all philosophers and *savants* of our time, whatever their schools may be. If, peradventure, there be in existence an impenitent materialist, he cannot complain if he sees a system criticized when he holds in his possession its peremptory demonstration; when his boys come home from school he can unfold his proofs and hand on to them the "good news."

II. For philosophy some people wish to substitute the history of philosophy. In the education of youth this would be replacing the easiest by the most difficult, the clearest by the most obscure, and the useful by the superfluous. There is nothing more arduous to the untrained mind that is not *au courant* with pure philosophy than the history of systems of philosophy: either it does not understand them, or what it does understand is unfamiliar. The connection of systems and the deeper features of doctrines are only intelligible to ripened minds. The superficial history of philosophy is apt to run down philosophy itself. All that need be known—but it must be well known—are the great systems; all else is only useful to the erudite. A single dogmatic question, thoroughly dissected, does more for education than a bird's-eye view of the whole history of philosophy.

III. The course of philosophy should be obligatory in all cases; for those destined for scientific careers, medicine, the higher walks of industry and commerce, and especially for those intended for literature, law, and pedagogy. A French essay on some philosophical subject should be required from all boys when leaving school.

At present, mathematical students go through a so-called course of philosophy—which is a meagre course in logic followed by such ethics as are taught in the primary schools. The whole would fill a dozen pages, which the boys learn by heart, without thoroughly understanding or caring for it, and with a view to a *vivâ voce* examination of a very simple character. Philosophy is valueless in instruction if it is not paramount and complete. There is not one of the various questions in the full programme of philosophy for boys taking up literature, which is not indispensable to future *savants:* distinction between "psychological and physiological facts" (which they confuse later in life); "method of psychology" (which they will look down on compared with mathematical and physical methods); "the sensibility, intellect, and will" (of the elementary laws of which they will be entirely ignorant); "man and the animal" (between which they will be unable to distinguish); "dogmatism" (into which they will certainly fall in science); "scepticism" (which they will profess with respect to philosophy, and perhaps even with respect to ethics); "conceptions of matter and life" (which are the very objects of their studies); "materialism and spiritualism" (between which they will presently have to choose). If we suppress all these questions, we leave our future *savants* and doctors almost inevitably exposed to materialism or to blind religious bigotry. Who are more prejudiced than *savants* who have had no philosophical culture? They are prejudiced against psychology, against the science of ethics, and against philosophy as a whole. Accustomed to assertion of positive facts, they are negative to all that cannot be demonstrated with the certainty of mathematical or physical theory. As soon as they set foot in the moral and social world they experience the giddiness of which Plato speaks; their heads are turned, their eyes are dazzled, and they talk the more nonsense because they have been accustomed to the rectilinear reasoning of the positive sciences, the infinite shades of the moral would escape them, and, as Plato says, they can only "embrace the trees and stones they find on the road." Objection is rightly raised to literature apart from philosophy; but *savants* without philosophy are still more dangerous, for literature is at any rate not dissevered from moral and social life, and even is an introduction to it, while the exclusive study of science and its applications warps and materializes the mind. With philosophy, on the contrary, science is grandeur of thought, and if the charm of literature be added, the mind is fortified and embellished. Apart from these three terms of the problem—science, literature, and philosophy—education is a mere sketch, or an instruction often more dangerous than useful. I therefore refuse, in the face of all present or future official programmes, to give the name of "classical instruction" to any system of study from which these three terms are missing. Without literary and philosophical culture "you will never make, with all your science, anything but *bêtes utiles*," as Saint-Marc Girardin somewhat coarsely put it. Happy are we if we do not turn out brutes that will do us mischief!

An examination has recently been arranged for our future doctors, without any serious study of philosophy and without the French essay. Now, those who are going to be doctors particularly need complete philosophical culture. The professors of various medical subjects are exclusively wrapped up in their special subjects or in preparation for definite examinations. But medicine is not a pure science, it is still an art, or rather, it is an art that is mainly moral and psychological. Psychology is more useful to the doctor than botany; he will not have to gather flowers for his medicines (and their botanical properties have nothing to do with their medical properties). The doctor should act as much upon the mind as upon the organs of his patients, his moral action is often the cause of three-quarters, if, indeed, it is not of all of his success. Apart from mental or nervous diseases, we see the *rôle* of suggestion, the sovereign influence of confidence and hope, of calm and mental power, being more and more recognized. In the family the doctor sometimes even now, as in the good old days, is the counsellor and friend. Does any one suppose that the true doctor's main duty is feeling the pulse, looking at the tongue, scrawling a prescription that he has learned by heart from the pharmacopœia, taking up his hat, and returning to his carriage (the whole visit lasting a quarter of an hour) to note in his memorandum-book — visit to Mr. X——, £1?

A good philosophical training is necessary to protect the doctor against the theoretic materialism to which the dissecting-room and lecture-room give him a tendency, and against the practical materialism to which the daily exercise of his profession exposes him; the taste for higher things will prevent him from regarding as a trade one of the arts in which morality plays the greatest part. A doctor is not a mere veterinary surgeon for men and women; he must not be a mere vendor of prescriptions. In no profession is it easier to abuse either the credulity or the pious feeling which compels a family to make any sacrifice for the sake of one of its members who is in pain or in danger. The rapacity of the doctor is one of the vilest abuses that can be made of science, and yet we see daily examples of it around us; who has not, among the majority of devoted doctors, come across a jackal *quaerens quem devoret?* Charlatanism invades the pharmacy and puffs itself by shameless advertisements; do not let it invade and dishonour medicine itself. The diploma of the doctor is a privilege conferred, a moral and social guarantee; and the body that grants the diploma may lay down its own conditions. The most essential of all conditions is that the applicants should have received the complete literary and philosophical education which forms the liberal and disinterested mind.

We may eliminate from the philosophical course for our future doctors questions relative to the history of philosophy and philosophers, æsthetics, the philosophy of languages, historical criticism, the philosophy of history, and applied logic. But—the reader may object—even to the future doctor these are of more value than a course of botany (which is useless to him) or of physiology, which he must learn over again, scalpel in hand. No doubt; then make the specialists, in the instruction that is called higher instruction, understand this, for in spite of noble exceptions that instruction becomes more and more a preparation for technical examinations; make the specialists understand the meaning of *dignus, dignus es intrare!* An ill-conceived utilitarianism is rampant; classical instruction must forsooth make some concession to the famous "needs of modern societies," especially when the new "French instruction" pompously announces that all these needs are satisfied: the need for *all* of botany, zoology, mineralogy, geology, etc. All these are to be learned for the final examination, in order, as Guyau says, that the examinee may be at liberty to forget.

CHAPTER VI.

THE NECESSITY OF PHILOSOPHY TO THE TEACHER.

"LIKE master like boy." I do not dream, with Plato, that philosophers should be kings, but am content with the more modest wish that they should be educators; over the entrance to the professions should be written: "No admittance without philosophy." Pascal's father wished his son to be always more than equal to the work set him; and *à fortiori* the teacher should be in advance of his professional duties. If it were said that grammar, for instance, to be well taught should be in the hands of a philosopher, it would sound like a paradox, and it would be true, for to make others understand grammar and to make it interesting to them, to make them seize its logic even when it seems illogical, one should be a thorough master of it. And if it were said that the special sciences—chemistry, for example—should be taught by philosophical minds; and if even it were asserted that the mere entrusting of classes to teachers fortified with a stronger philosophical culture by the side of their special subject would be enough to reform instruction—the paradox would be equally apparent.

After a boy has been suffering at school from "indigestion" of mathematics, physics, etc., he then has a further three years at the same subjects at the École Normale. How can it be certain that he can make mathematics, etc., educative; that he will rise up above details; that he will be so far disinterested as to be able to look beyond his own special subjects to the philosophical horizon of the different sciences? Will the teacher of history, after his studies in paleography, epigraphy, and philology, be above dry facts and dates? will he modestly lay aside his dearly acquired erudition? will he care to take general views, and to make of history a subject for accurate, philosophical, moral, and civic training? Will the young grammarian, transferred from his essays, verses, translations, etc., to take charge of a class of children, know at once how to interest them in the beauties of declensions and conjugations, Latin and Greek exercises, etc.? will he be able to manage them? will he without previous study be acquainted with the best intellectual methods? will he be able to introduce into his subject that philosophical, historical, and even poetical spirit which is necessary to animate it and make it delightful? Grammarians too often forget that once grammarians were the commentators of the poets, that they used to instil this spirit into instruction, and hence they had an educative mission. In fact, a training for three years in the higher forms of literature, rhetoric, criticism, and history may make good speakers and elegant writers, but will not necessarily turn out good teachers of the "humanities" or good educators. What ideas will they have in their own heads? What ideas will they give their pupils? Will they always be warm, enthusiastic, and sympathetic in their literary criticisms? Will they follow the example of all the great writers they have to make their pupils love, understand, and imitate,—and be thinkers? It is to be feared that they may sometimes be devoted exclusively to the worship of form, that they may be willingly sceptical with regard to ideas, that they may from time to time affect a fine indifference to philosophy, *i.e.* to what is the basis of all great literature, whether the psychological study of manners and character, or morality and politics, or religion and metaphysics, or lastly, artistic and æsthetic criticism. The mere man of letters can rarely select what is adapted for the education of youth, and what will excite in the young, not a spirit of disparagement or conceited criticism, too frequent among us, but a genuine passion for the beautiful and the good. No doubt some men are born teachers, but we must not count on the exceptions. The rest should learn how to teach and how to *elevate* the young; and for that purpose the first and most essential condition is the inspiring our teachers with the philosophical spirit, and thereby interesting them in psychology, ethics, and social science. If psychology, logic, and ethics do not throw light upon matters of education, what will? Given a man to whom the human mind is not a closed book, who is familiar with inductive and deductive methods, and with the philosophy of science, who, in fact, has studied the springs and rules of conduct, will he not be a better educator or even a better teacher than the man who has from the first been confined to research in his special subject, who has no interests beyond it, and whose whole horizon is affected by the narrowness of his field of vision? The mere amount of one's knowledge is no guarantee of teaching power; excessive erudition may even have a bad effect on it. What is the great art in teaching as well as in writing? "To know where to stop." Now, enthusiasm leads the man whose knowledge is wide to tell all he knows; a noble but an unprofitable enthusiasm. If we are to teach science, literature, and history to the young, we must place ourselves at a point so high that we can feel a kind of detachment from details; a philosopher would certainly be more capable, as a rule, of doing this than a mere specialist.

In Germany, each teacher is required to be proficient in two of the three great divisions of instruction. We should at least expect our masters to have a sound knowledge of psychology, ethics, æsthetics, logic, and cosmology, so that they can teach either philosophy or their special subject. Having the philosophical spirit, they will, *ipso facto*, have the best part of the pedagogic spirit. They will look at questions from a higher point of view, and will see them in their real place in the sum of human knowledge. They will no longer attach the same importance to details of scientific, literary, historical, and geographical erudition. As psychologists, they will be better acquainted with the faculties they have to cultivate ; as moralists, they will see the end at which they must aim, and will give to their teaching the moral and patriotic warmth which is its very essence. As cosmologists, they will add the philosophy of nature to the knowledge of nature ; the properties of fluorine or bromine, the laws of the dilatation of bodies, or of electro-magnetism will not hide from their view the great cosmic laws of which physical and chemical laws are only a transformation.

Our future teachers must receive a good classical, and especially a good philosophical education. We have seen how philosophy, besides being the basis of pedagogy in general, is necessary to teachers of science to prevent them from specializing and from narrowing down their mental field, and thus narrowing down an instruction which should be an opening out upon the cosmos. It is to be desired that science should be taught to the young by men reproducing in themselves a little of that universal spirit displayed by the greater *savant*-philosophers—Aristotle, Descartes, Pascal, and Leibnitz. The tests at entrance to the normal schools are very difficult because of the need of selection ; nothing could be better, but a preliminary selection should eliminate all candidates who have had no literary training and have not been through a sound course of instruction in philosophy.

We must put an end to the invasion of the profession by men who know no Latin and no philosophy. Men whose special subjects are history, literature, mathematics, etc., should be compelled to study these psychological and metaphysical principles which are paramount in their subjects, and they should also study the moral and social inferences to be drawn from these subjects. This would be a means of preventing that excessive specialization which, as I have shown, is an intellectual injustice, a mental demoralization. To be able to write an essay on a subject in psychology, ethics, logic, or the philosophy of science is the least we can expect from a future teacher ; it is, so to speak, the minimum in a pedagogic diploma. If the essay in philosophy is the true centre of gravity of the boy's work, it is so *à fortiori* for the masters. In our normal schools, the science students should take an additional course in philosophy, social, economic, and political science. If philosophy, in our days, must be scientific, science, in its turn, had never greater need of being philosophical.

CHAPTER VII.

EXAMINATIONS AT THE END OF SCHOOL-LIFE. ABITURIENTENEXAMEN.

IN former days the baccalauréat, or leaving-examination, was reached in the ordinary course of events after a regular course of study. In those days the *baccalauréat* did not absorb the whole attention of the student as it does at present. Why? Because the examination was less encyclopædic, more distinctly literary, and less pseudo-scientific. To this type we must revert and so diminish the play of chance and the unexpected. Chance only comes into play when the programme is too wide, and then mainly in the *vivâ voce*. By reducing the programmes to what is absolutely necessary in science and history, the authorities would have the right to increase the severity of the test in all that is an active mental exercise. It is therefore essential that the written examination should be as severe in these subjects as possible—of course taking into account the age of the candidates.

One criterion may be employed to distinguish between the fundamental and the accessory in examinations. Everything that can be learned from a manual is accessory; everything that cannot is fundamental. History, geography, science, biographies of illustrious writers, summaries of literary history, can all be learned from little handbooks *ad usum asinorum*. But you cannot learn from a manual how to write your own tongue or Latin, or to translate, etc.; you cannot learn the really important parts of philosophy from a manual; the student would soon betray his ignorance. In examinations, then, we must make short work of all questions to which the answers are already given, packed in a little *in*-18 at 1*s*. 6*d*. On the other hand, we may be as severe as we please on the personal work of the student, on all that tests a good or bad intellectual, literary, or philosophical instruction. Suppose we wished to test a man's bodily strength. Instead of trying him with a dynamometer or with lifting heavy weights, he is questioned at length on works on gymnastics and made to give a list of processes and to write out courses of exercises; he is asked about the contests of the Greeks and Romans, and a hundred other equally relevant matters. Is that how a man will become strong and give proof of his strength? But that is nevertheless how we proceed to develop and test his intellectual power; we make our students learn by heart and quote, and we question and question for ever; and to the student who retails or writes out most answers we give the diploma he seeks. This is not the way. Translation, essays, composition in Latin and the mother tongue, are the real intellectual dynamometer.

We must not expect from the student an infinite number of scientific details. By so doing we are requiring our youth to learn—but superficially—the very subject they must learn over again—and this time thoroughly—as soon as they enter the "special" or technical school, or the university. What is the use of this hastily acquired and ill-digested knowledge which, not requiring real mental power, is of no use in later studies? In the interest of "specializing" would it not be better, as in Germany, to require a good culture of the faculties and a thorough knowledge of the elements? Besides, is it not more logical to expect from the young, not what will be required from them again and what it is definitely proposed to teach them, but what will not be again required from them?

The final examination should preserve the unity of a general classical training by requiring from all pupils a fundamental knowledge of Latin, Greek, science, and philosophy, in addition to the mother tongue. At the same time, it should comprise a further test in either—literature and science (for doctors), literature and philosophy, literature and mathematics, or economical and industrial science.

CHAPTER VIII.

PHILOSOPHY, AND ITS PLACE IN HIGHER EDUCATION.

I. THEORETICALLY, higher instruction has a twofold object: to sum up the noblest achievements of science and civilization, and to discuss the latest scientific, philosophical, historical, and literary problems. Higher instruction must not therefore merely consist in the exhibition of known truths; it must comprise discussion, criticism, and research. The young man must take his part in the work of science and must "co-operate in the progress of civilization."

Unfortunately, improvement meets with an obstacle in the ever-increasing "specializing" to which our higher instruction is tending. A young man, for example, devotes himself to history or law, and takes no further interest in the progress of natural science, anthropology, or philosophy, although it is upon them that history and law are based. Similarly, the medical student neglects the moral and social sciences, although these are intimately connected in many ways with medicine. The great antinomy of the universities is that, while they ought to be the centres of pure speculation, they betray a fatal tendency to becoming merely technical schools.

The wonderful and partly mythical accounts we read of the German universities exercise a kind of fascination on a certain order of mind. The number of masters and courses, the number of students, and the activity everywhere manifest, excite astonishment when compared with the state of things in France. But, in the first place, the phenomenon is not so extraordinary as it seems; it is simply due to the absence in Germany of schools like our great normal and polytechnic schools, to the blending of the faculties of law and medicine with the faculties of literature and science, and finally to the fact that the universities supply the country with Protestant pastors, and that importance is attached to the theological faculty by the German clergy. If we were to realize the dreams that are haunting some of our reformers, and were to suppress with a dash of the pen all our great schools, and to combine all the faculties—theology included—into universities; if we were to allow every doctor in letters, science, law, medicine, etc., to give courses of lectures, to close those lectures to all not *boná fide* students, and to charge a fee for the course each student takes—all our students would be gathered into the great towns, *i.e.* our future engineers, lawyers, doctors, etc., our future teachers, who would get no professional training without a preliminary university career, and our future priests who, if France were Protestant, would only be able to take holy orders after a university course. This would be a struggle for life and for profession, a universal *sauve qui peut*. The number of students would be tripled or quadrupled as in Germany; and to this must be added the amateurs, the rich young fellows, who, at present, go to Paris to "read for the bar," or to amuse themselves, or to read science, literature, philosophy, or history. As each teacher would have the power to gather around him a school or "seminary" for his own special subject, we should have schools of this kind scattered broadcast everywhere; students would flock to the most successful teacher, and change their master at will. The faculties of science would certainly display activity, because they would be turning out engineers, doctors, officers for the army, etc. So would the faculty of letters, because it would be training our future teachers; and the faculty of theology, because (by hypothesis) it would be training priests for the whole of France. The professors at the universities would compete in order to attract them to their chairs, and also, as a matter of fact, to increase their emoluments. The students would organize, fight duels, and keep the streets of Caen, Toulouse, and Nancy alive day and night. In fact, it would be very much like Germany transported into France. The only question that remains is—Would this activity be as beneficial to science as is supposed by those who base their hopes on the restoration of the universities, and even on the suppression of the special schools? We should see our professors become "coaches" for examinations, and students would spend their four years, some doing nothing—as is the case with most students in law and medicine—and the rest working for their diplomas at special and "paying" subjects.

This cannot fail to happen in Germany, and is what is actually happening in that country. According to Deputy Lasker and an anonymous writer (who is known to be an eminent professor), the old obligatory courses, and in particular those on philosophy, having been suppressed, "students are attached to the directly practical courses they need." To all else they are profoundly indifferent. The universities are so only in name; they are merely collections of "special schools for all tastes and all interests." Disinterested work has given place to realism and utilitarianism. This anarchy is making its effects felt in Germany—witness the complaints of even the Rector of Berlin University, M. Dubois-Reymond—as it has done in Belgium for some time. If we dethrone the humanities, our professors in the faculties, who, after all, are now free to devote themselves to pure science if they have the capacity for so doing, will become the servants of the different professions. Certainly each university should adapt itself to the practical ends of the liberal professions, but its most important task is the completion of a high scientific culture. Besides, we must not forget that even practical work depends upon the study of theories; general culture should therefore be the basis of special studies.

II. The best solution of the difficulties raised by the organization of higher instruction lies in the sound organization of philosophy and social science. These studies should have the same function in the universities as in the secondary schools; they should synthesize and point out the ultimate direction of all other studies; they should ensure the harmony of the different sciences and of the different faculties, and thus endue the whole organism with life. The opposition between the three faculties of philosophy, science, and literature, which originally sprang from the purely formal character of the last and the scholastic character of the first, must cease. Nowadays, as M. Angiulli* remarks, all the subjects of the literary section—linguistics, philology, æsthetics, history—have taken a scientific direction, and have as basis the data of natural and of mental science. Not only therefore is opposition fatal, but separation is equally so. The higher science which exhibits the unity, homogeneity, and continuity of the laws and methods of all other sciences, the "first" science, which lays down the principles, rules, and objects of all special subjects, is philosophy. "If philosophy is the basis of the sciences," says Zeller, "the faculty of philosophy should be the basis of the other faculties. Further, in a better organization, the course of philosophy should be obligatory to the students in every faculty, and there they would find the reason for and the complement of the special subjects they are taking up. When division of subjects had not reached the extreme which is now so full of danger to the progress of culture, it was customary for all to take the course in philosophy. Now it is shown that philosophy is no longer possible without the special sciences, and that they, on the other hand, find their real significance and harmony in the unity of philosophy, we feel the need of a reversion, in a more explicit form, to the primitive harmony." The university, in Zeller's opinion, is more than a mere union of different faculties; its importance lies in the philosophical co-operation of their methods and forces.†

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* "La Filosofia e la Scuola."

† "Vorträge und Abhandlungen," ii., 455, 465. Cf. Angiulli, *ibid.*, p. 406.

CHAPTER IX.

CONCLUSION.

A HUMOURIST, drawing a picture of society as it will be, introduces us to a school of the future. Deep silence; boys motionless on their seats; what clever boys! I should think so! they are asleep. A master enters, hypnotizes them, and says "Sleep!" and straightway proceeds with his lecture, as learned as you please, and overloaded with minute details. "Remember all this when you wake; awake!" The whole class rushes off to its recreation, and, without any effort, each brain has registered word for word all that was said by the master. This is the ideal of modern teachers—the making of the memory a storehouse. Unfortunately, nineteenth-century brains have not as yet acquired this marvellous faculty of registering facts under hypnotic suggestion.

Our system of instruction, principally with regard to history, geography, and, lastly, foreign languages, is based upon a series of psychological blunders, especially with reference to the nature of the memory. It is of great importance that these blunders should be corrected by a knowledge of the most recent psychological investigations, so that the existing system of pseudo-instruction may be reformed from its very foundations.

The fundamental error I have shown to consist in a misconception of the true means of improving the memory and the judgment, or, in a word, of acquiring permanent and subsequently useful knowledge. It is now recognized by psychologists and physiologists that the memory is conditional on the occurrence of paths in the brain between certain cellules; the vibration of cellule *a* is communicated to cellule *b*, and by this means of communication one idea awakens another and thus association is established. When the nervous path is excited, but not actually formed by a nervous current, we have a simple retention of ideas, or rather a possibility of recollection; if the brain-path is formed by a current, we have an effective recollection of ideas. This being so, what are the conditions of a good memory? Since the memory is altogether conditioned on brain-paths, its excellence in a given individual will depend partly on the number and partly on the persistence of these paths. The persistence of the paths, which is the cause of the tenacity of the memory, is a physiological property of the cerebral tissue, whilst the number of the paths, which constitutes the wealth stored up in the memory, is entirely due to the facts within the mental experience of the individual. Now, as far as the tenacity of the memory is concerned, it is a *native* quality, varying with the age (a maximum in childhood and a minimum in youth) and with the state of the health, but upon which exercise has either very little effect, or immediately exhausts its possible effect. If you want your memory to be tenacious, you only have to take care of your health and avoid fatiguing the brain; these are the sole means at your disposal. The contrary opinion is widespread, especially among parents and teachers. We are constantly hearing that we must "develop the memory," by, for instance, making the child learn many lessons by heart. Mr. W. James has shown by reasoning and by experiment how false this prejudice is. We can trace many or few lines more or less deeply in the sand, but that in no degree changes the degree of natural tenacity of the sand; similarly we cannot notably increase the degree of tenacity of the cerebral tissue. The following is one of Mr. James's experiments.* During eight successive days he learned 158 lines of Victor Hugo's "Satyre." The total number of minutes required for this was $131\frac{5}{6}$. He then, working for twenty odd minutes daily, learned the entire first book of "Paradise Lost," occupying 38 days in the process. After this training he went back to Victor Hugo's poem, and found that 158 additional lines took him $151\frac{1}{2}$ minutes, *i.e.* 20 minutes longer than the previous 158. This, then, is the effect of many lessons learned by heart to "exercise the memory"! The experiment was continued by Dr. W. H. Burnham, Mr. E. S. Drown, Mr. C. H. Baldwin, Mr. E. A. Pease, etc. The result was that they learned by heart no more rapidly after eight days' training than before. On learning a series of nonsense-syllables, the average time of the second series was considerably shorter than the first. This seems to show the effects of rapid habituation to the nonsense-verses. There are even curious oscillations from series to series, which seems to prove that the attention itself oscillates.* As for forgetting again, it was almost immediate. Mr. James consulted several experienced actors on this point, and all denied that "the practice of learning parts has made any such difference as is alleged. What it has done for them is to improve their power of studying a part systematically. Their mind is now full of precedents in the way of intonation, emphasis, gesticulation; the new words awaken distinct suggestions and decisions; 'the new ideas' are caught up, in fact, into a pre-existing network, and thereby are recollected easier, although the mere native tenacity is not a whit improved, and is usually, in fact, impaired by age. It is a case of better remembering by better thinking."

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* "Psychology," vol. i. p. 667, *et seq.*

Mr. James also consulted a clergyman who had marvellously improved his power by learning sermons by heart. This gentleman replied, "Memory seems to me the most physical of intellectual powers. Bodily ease and freshness have much to do with it. Then there is a great difference of facility in method. I used to commit sentence by sentence. Now I take the idea of the whole, then its leading divisions, then its subdivisions, then its sentences." It is clear, moreover, that numerous connecting links are established by habit between each sermon and its predecessors; at bottom, the same ideas, the same processes of division, development, and style, are to be found in each. It is not surprising that, after a training extending over several years, a sermon should be more rapidly learned, that the intellect should acquire dexterity in finding its way amid the usual arguments and texts; but it always remains doubtful if the cerebral capacity of retention, as such, has suffered any profound modification.

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* *Vide* Ebbinghaus, "Ueber das Gedächtniss, experimentelle Untersuchungen" (1885).

Training can perfect *methods of study*, *association of ideas*, *attention*, and *judgment*, but it cannot modify the organic memory with which the young are naturally gifted. Hence, if the educator pays attention only to the memory, he is losing time; the only possible method of action is by attending to the association of ideas. He may interest, exercise, and perfect the *attention*, he may increase the number of cerebral paths, and finally, he may increase the number of functional connections between the different cerebral paths, and systematize the ideas in the intellect; thus only can he facilitate and make more certain the recollection of one idea by means of another.

The condemnation of "cramming" for examinations is a consequence of the best-established laws of memory and forgetfulness. What is learned in a short time for a single occasion and for a single purpose, cannot have formed in the mind many associations with other ideas; the number of cerebral paths which terminate in this hasty and recently acquired knowledge is very small; they remain isolated from the mass, and are ready to disappear into an inevitable oblivion. A month after the examination, almost nothing is left. The memory, properly so called, has even less vigour than before; the brain will be fatigued, the intellect will have developed but little, because the ideas are confused and disordered. "Cramming" is therefore as futile as the sieve of the Danaids.* On the contrary, says Mr. James, "the same materials taken in gradually, day after day, recurring in different contexts, considered in various relations, associated with other external incidents, and repeatedly reflected on, grow into such a system, form such connections with the rest of the mind's fabric, lie open to so many paths of approach, that they remain permanent possessions. This is the *intellectual* reason why habits of continuous application should be enforced in educational establishments. The great memory for facts which a Darwin and a Spencer reveal in their books is not incompatible with the possession on their part of a brain with only a middling degree of physiological retentiveness. Let a man set himself early in life to the task of verifying such a theory as that of evolution, and facts will soon cluster and cling to him like grapes to their stem. Their relations to the theory will hold them fast; and the more of these the mind is able to discern, the greater the erudition will become. Meanwhile the theorist may have little, if any, desultory memory. Unutilizable facts may be unnoted by him, and forgotten as soon as heard. An ignorance almost as encyclopædic as his erudition may coexist with the latter, and hide, as it were, in the meshes of its web. . . . In a system, every fact is connected with every other by some thought-relation. The consequence is that every fact is retained by the combined suggestive power of all the other facts in the system, and forgetfulness is well-nigh impossible."

Hence, from whatever point of view we set out, we arrive at the conclusion that instruction is not an affair of memory, but of intellectual systematization; it is not the *quantity* read, heard, or written, that can either perfect the memory or increase our knowledge; this can only be done by (1) the *order* established between our ideas; (2) our *interest* in those ideas. The more numerous and the better arranged are the facts associated in your mind with this or that idea, the more right you have to say that you know that fact, and that you will be able to make use of it afterwards. There are numerous avenues opening on the fact which you may follow in case of need; it will become as it were the centre of a number of lines of railway, a capital or important town on the map of your brain.

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* *Vide* Guyau, "Education and Heredity," p. 136.

We see, then, that our system of instruction is opposing its own ends; it goes on multiplying the number of subjects, and so makes them cease to serve their purpose. And as cerebral capacity is limited, one part of the brain is only filled at the expense of the rest. Each teacher retails all he knows, and the more he retails the less his pupils will know about it. He must always, on the contrary, say to himself at the beginning of a lesson: I am going to teach a number of things which for the most part will be utterly forgotten in a week, or a month, or a year; what must I throw into relief, and save from the general wreck? And further, assuming that the letter of my teaching is entirely forgotten, what is the spirit that should survive, what is the moral and intellectual perfection that will result from what I have said, even when the memory no longer retains a single word of my lesson?

The worst feature in the modern mind, which, moreover, the system of instruction by the passive storing up of facts accentuates, is dispersion of thought. The objects of knowledge have become so numerous that they must, as far as ordinary intellects are concerned, remain in a state of chaos. Either there is a desire to learn everything, and only superficial, inaccurate, and disconnected knowledge is acquired, or there is a wish to take up thoroughly a particular science and we are at once in the depths of a "speciality" whence no horizon is visible. Strengthened on one point, the mind is weakened on others, as is the case with disequilibrated organisms in which one part, developed at the expense of the rest, becomes entirely abnormal. Are we to be superficial or are we to be narrow? that is the dilemma from which training in science, in history, or even in literature if taken alone, cannot escape.

M. de Laprade has devoted a volume to "L'Education Homicide." From a still broader point of view we might write a volume on the education that is destructive to the race, on *l'éducation ethnicide*. As Guyau says, in overloading the memory our main concern nowadays is to obtain the "maximum crop" from each individual—almost as if a farmer were to take the most luxurious harvest he could get from a field for several consecutive years, without restoring to it what it has lost; the field would be exhausted for a long time to come. This is what happens, Guyau adds, to races that are overworked, but with this difference, that rest and lying fallow will restore to land its original fertility, whereas an overworked race must degenerate and eventually disappear.* It is clear that, in the instruction of our youth, we are far too much concerned with visible and immediate fruits, with all that is attractive or of immediate utility; we do not attempt to husband and store up our forces, nor do we concern ourselves with the future fertility of the soil with which we have to deal. "The real qualities of a race are not wasted because they are not immediately brought to the light of day; on the contrary, they accumulate, and the treasure of genius is rarely found but in the coffers in which the poor have amassed their wealth from day to day, instead of spending it in follies."

The acquisition of knowledge is therefore a far less important matter than its *organization*, which alone ensures persistence and brings it into play. We know the physiological law which was observed by Isidore Saint-Hilaire, and on which Spencer rightly lays great stress—the inverse variation of increase of volume or height with the development of the internal structure. In the chrysalis the volume is not increased, and the weight even diminishes, while the internal structure is actively developing, the metamorphosis is rapidly taking place, and the wings emerge, ready to open. So with the development of knowledge; acquired knowledge, to be of real use, must be organized. An excessive increase of scientific or literary knowledge will in proportion diminish the organization—which, however, is far the most important; the chrysalis will be unable to unfold its wings or even to form them.

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* "Education and Heredity," p. x.

II. The pretext for this intellectual overwork is the imperative necessity of considering what is useful; but even from the utilitarian standpoint, what are the essential qualities for success in the higher walks of industry or commerce, for example? Is it enough to have acquired a certain amount of knowledge? In the first place, we must have, with respect to the intellect, the inventive, imaginative, and initiative spirit; with respect to the will, we must have energy and the love of work. Now, the spirit of invention, from which industrial genius and talent, as well as scientific genius, must spring, is not acquired by a simple process of storage. If a man's memory is loaded with results, and if he is incapable of going back to first principles and of methodically reconstructing the whole, he is not a *savant*, and may very well be unintelligent. What makes the *savant* and the business man is reasoning combined with imagination; the way to learn a science or an industry is to partially reconstruct it one's self, to reinvent it by passing over the paths marked out by others so as to follow the connection of first principles and final conclusions. The man who has mentally constructed a part of the edifice of physics, for instance, and who perfectly understands that part with the interconnection of its laws, is a better physicist than the man who knows by heart all the results of physics. It is therefore not so much the mass of acquired knowledge that has to be considered, as the mental power developed. Literary exercises, as we have seen, are eminently adapted to the development of imagination, ingenuity, and invention. At the same time, they develop the taste—

another important element in industrial success. Then comes the development of the will, and here again is a law misunderstood by our system of forcing, for success in the practical application of science, as in all other employment of the activity, depends less on the sum total of knowledge acquired than upon the energy of the will. In a great measure this energy depends upon cerebral vigour; generations overworked by their scientific training and physically enfeebled, eventually lose their will-power. The hasty and excessive culture of the intellect and memory must therefore defeat its own end—utility eliminates the strongest characters by selection to the advantage of the weak. So that not only does the storing up of scientific facts in the memory make neither the true *savant* nor the great manufacturer, but it further tends to rob them of the fund of energy, initiative, and enterprise without which success is impossible. The more the programmes are overcrowded "with a view to industry and commerce," and that at the expense of classics and the true humanities, the more the spirit of routine, of passivity, and of mechanical imitation is developed, the more are the will and intellect enfeebled. Further, the true interests of the higher paths of industry and science are but ill conceived without a highly intellectual, æsthetic, and moral culture.

III. We have just seen that moral culture tends, by the indefinite increase of the number of subjects in the curriculum, to become more and more *extensive* and less and less *intensive;* this is an evil which must be remedied. The greater the variety of the objects of thought, the more *intensive* must be the education of the thinking student to avoid its becoming superficial and sterilizing. On the other hand, if we are limited to one kind of intensive culture, having as its aim a special class of determined subjects, we shall eventually have a narrow and "specialist" education but ill adapted to a social environment which is becoming ever wider. How can the antinomy be avoided? By the method which Guyau proposed, the idea of which he borrowed from modern culture of the soil—*i.e.* the method of rotation of crops, which enables our culture to be at once intensive and varied. After a rigorous elimination of what is not essential, we must take the three or four fundamental subjects in all systems of secondary education, carry them to a higher degree of intensity, and make them succeed each other so that in the case of both the mind and the soil variety may give the needed rest in an age in which the mind can no more lie fallow than the soil. This is the only way of keeping the race fit for its work without sterilizing it by over-pressure.

I have shown in this volume that the subjects essential to an intensive training are—literature, the general theory of the sciences, and philosophy. The ideal end of humanity is clearly moral and social life carried to its highest degree; the subjects connected with man and society are those of which the development and triumph will be seen in the future; in this direction, therefore, must education be orientated. Thus, in a measure, we have marked the object of all instruction; moral and social ideas with their accompanying sentiments seem to me to be the end of education; the literary, historical, and philosophical humanities on the one hand, and the scientific humanities on the other, are the means of attaining this end. But literature, general history, and philosophy have a breadth that scientific studies do not possess; they do not bring into play the intellect alone; they affect the sensibility and the will, the heart and the character; they are already penetrated by social and moral ideas; they are therefore much nearer the ultimate goal than mathematics, physics, and the natural sciences. For this reason I have given them a more important position than science in a liberal education. I have thus come to an entirely different conclusion from that which Spencer and Bain have adopted, and which has been based upon an inaccurate interpretation of the principles of evolution.

By the side of a really intensive culture on these essential points, we must place an extensive instruction on secondary points. This extensive part of instruction varies with the individual, for each individual cannot learn everything at once. If a thousand subjects are necessary to a civilized nation in these days, that is no reason why the same persons should learn them all. Only, once we admit the principle of a diversity of complementary instruction, we must determine the *age* at which these various special subjects—each of which is useful to a civilized nation—should be acquired. Now, I have shown that it is not at school that boys should learn the thousand subjects necessary to modern nations; they are at school to receive a general instruction which can only admit of parts that are interchangeable in the case of studies of really secondary importance. Here, then, we must apply the criterion I have suggested, *i.e.* the distinction between objects of mere *instruction*, which, being variable, admit of equivalents, and the general means of *liberal education* which admit of no equivalents. Thus stated, the problem of modern education is no longer as insoluble as at first sight it appeared. What is the cause of intellectual over-pressure? whence does overwork arise? In science; almost only in science and in its growing multiplicity of detail. Now, I have shown that the sciences, with their subdivisions and details, are just what are least essential to secondary education. They may well introduce what is new into human knowledge, but they introduce nothing new into education; I repeat that the third book of Euclid is by no means—from the pedagogic point of view—the revelation of a new world; the end of chemistry is of the same value as the beginning; a little more or a little less is of small importance from the educational point of view. It is only therefore with respect to a boy's profession that such knowledge of scientific details is preferable. Now, even from the professional standpoint, it is of pre-eminent importance to have a well-trained mind and a *general* scientific aptitude. Introduce, therefore, a sound study of the leading branches of science, and let each boy afterwards make his choice among the other branches. Here the division of labour may come into play, for, on the whole, all scientific work is of much the same value.

On the other hand, in the moral, social, and philosophical order, there are subjects which I feel are absolutely necessary to every member of the ruling classes; our schools must not send out into the different professions men whose minds are without philosophical, moral, and civic culture. In this case no equivalents can be admitted. In the first place, nothing can replace a study so original and unique of its kind as philosophy. Besides, intellectual over-work does not come from this quarter; philosophical science, on the contrary, from its co-ordination of knowledge, presents us with this wonderful advantage—that it simplifies knowledge while it appears to add to it, makes it more easily understood, and retains it by systematizing it. In the second place, do the classical humanities admit of a "real equivalent"? Should a secondary instruction, based upon the study of modern languages, on that of the mother tongue, on a wider and more practical study of science—should it be called the equal of classical instruction, equal in value, and equal in its sanctions? My answer was in the negative.

I think, in fact, that it has been placed beyond a doubt that the problems of education can be judged neither in the abstract nor in individual cases, but that they must be looked at from the point of view of general means, great national and international interests. I have shown the most striking instance of this in the question of "Latin," which is at the present moment the subject of such debate. From the abstract point of view, Latin and Greek do not seem to be absolutely necessary to education; nor do they seem any the more necessary for given individuals, if those individuals are well-endowed, and have educators skilful enough to replace the dead languages by a good modern instruction. But, when it is a question of knowing the best method of elevating and instructing the youth of the ruling classes in a given country for several generations, it is very clear that the question is altered. We have no longer to consider the objects of study in themselves, either abstractly or in their action on given individuals; we must consider all the "ins and outs," the general system with which each particular subject is connected, all the national and international reactions of the method of instruction selected, the spirit it tends at first to develop in the young, and then in the social class to which they belong; the tendencies to which a given type of instruction will respond, and the particular or general interests it brings into play. In short, it is a problem of such complexity that only a light head and a "light heart" would upset the instruction of a nation with a dash of a pen. Every part of public instruction holds together; the present basis cannot be changed without an infinite series of consequences and effects, some fortunate and others the contrary.

One of the partisans of "classical French training" has said, "The State must run no risks in the matter of instruction, because its initiative affects the whole community, and because it is far more difficult to repair the effects of ill-conceived or badly carried out attempts when they affect the whole of the social body." Individuals and private institutions may be as daring as they please, and may undertake to do anything in the matter of education, for their attempts never cover more than a partial field of application, and have only a limited range of influence.*

The most zealous of the promoters of the new "French classical instruction" have expressed their fears on seeing the authorities ready to institute this system throughout the country, and thus to provoke a kind of pedagogic revolution. "All we ask for," they say, "is a few experiments; let us have a few lyceums, and test our system progressively, instead of starting with a *tabula rasa*." Wise words, but a little ingenuous, perhaps. It is an excellent plan to make a few experiments instead of upsetting everything; but individual experiments, after all, will prove nothing, or at most very little. Here are some of the most distinguished university men, who have themselves received the most complete classical culture, whose successes at the university have been due to the very classical training against which they are now protesting; they have a new and enthusiastic faith in the virtues of this modern system—as they conceive it; we are to hand over to such men as these a whole lyceum, which they will pit against the classical lyceums. In other words, it is proposed to make a trial of the so-called French and modern instruction, by means of teachers who are nurtured in antiquity and the classical humanities, and who also are animated by the sincerest patriotism. Under such conditions, such a lyceum must be singularly unlucky if it does not compare favourably with its rivals. In reality, all boys would be trained in the same spirit, and would have been subjected to the influences of ancient literature, some directly, and others indirectly, but under the same class of teachers, prepared for their vocation by the same training. No definite conclusion could be drawn from such a plan. But generalize the system, subject all the secondary schools to the new *régime;* let the teachers gradually grasp its spirit; let families and children be accustomed to see in instruction an immediate advantage, an apprenticeship to the profession of to-morrow; and we must ask ourselves—will the literary and artistic, the philosophical, the disinterested, and really humane spirit be able to resist this growing invasion of instruction by utilitarian prejudices and scientific exigencies—and that at a time when the religious spirit is becoming weaker? That is the problem. It cannot be solved by discussions on the intrinsic value of Latin, Greek, or German, or by isolated experiments in the lyceums. Even if the experiment were made on the largest scale, the effects would not be felt until later. The same teachers, teaching other subjects, will still be saturated with the same spirit, and will make boys members as it were of the same family; but wait a few generations! Are our reformers so sure of the effects of their proposals as to venture on such an experiment on a vast scale—and that, too, without other nations doing the same? If they are so certain, if they imagine that by merely teaching the mother tongue and the usual languages they can face the invasion of purely scientific and materially useful studies, the barbarism of the scientific and of the industrial world which threatens our democracies, they cannot be too much admired. Once the sources of literature and art are dried up, or reduced to an almost imperceptible pool containing barely enough to slake the thirst of a few insects, we shall gradually see this utilitarian and scientific drought affecting the ruling classes, we shall see a middle class eager to gain, "ever hurrying onward," wholly abandoned to the struggle for existence, for wealth, and for power, with no criterion of education but the eternal "What use is it?" This will be the reign of universal platitude.

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* Ferneuil, "Les Principes de 1789," p. 269.

The French are reproached with their formal art, their formal literature, their dilettantism, and their lack of sober steadiness. I am far from refusing to acknowledge that there is something plausible in this reproach; but we must go to the true causes of the evil to find the true remedy. Our classical training is blamed; but in other countries it does not produce the same results. It is not therefore the fault of Latin or Greek, but, no doubt, it is the fault of the French and their ancestors, the Gauls. Again, the methods in use in a classical training are blamed. There is more truth in this. Our methods certainly are mainly directed to the turning out of men of letters, writers and readers of delicate taste. But must we renounce these qualities under the pretence of correcting our faults? Every quality has its opposite defect. It is dangerous to attempt to stamp out entirely the defects of a race, with which in a measure its vital force is bound up. Suppress the active methods of composition in the mother tongue and in Latin, adopt the methods of German erudition, reading texts at sight, running commentaries, etc., and we shall not even make our boys "erudite" in the German fashion; we shall only succeed in making them heavy and dull. Similarly, replace Latin and Greek by science and modern languages, and we lose our men of letters, and our real *savants*. We do not thereby prevent our young French lads from being fickle, often superficial, dogmatic, and *simplistes*. Not only do we not obliterate their defects, but by the less refined education we exaggerate them, and they lose their corresponding good qualities.

I have already pointed out that, from the moral and civic point of view, the types of education given to the masses, to women, and to the middle classes, are all of the same value, have the same social importance, and should be on the same level. But from the point of view of literature, science, art, and philosophy, the three types of education cannot be identified. Primary instruction or even the secondary education of *women* is one thing, the training of merely *receptive* minds, but secondary instruction for males is quite another, for it should train and form *productive* minds, minds with initiative. For this purpose a second-hand instruction is no longer sufficient.

Instead of lowering the level of the classical training, and that under the pretence of our being a democracy, it should be maintained at a high level in the very interests of the democracy. What are the reproaches aimed at a democratic *régime?* The artisan, it is said, recognizes no labour but manual labour, and takes bodily effort as a measure of the service rendered and the reward earned. It is with difficulty that an artisan can be brought to recognize the utility of capitalists, of the great industrial "contractors," of merchants, "those useless middlemen and parasites." How will things be when it is a question of men who are *thinkers* by profession?—philosophers, artists, men of letters, etc., whom M. Frary himself, as we have seen, treats as unproductive. Leave the direction of instruction to the democracy and its far too direct representatives, its politicians, and realism and utilitariansm must inevitably invade it. In one of the best of the American reviews,* Mr. Weinschell, speaking of the influence of democracy on instruction, tells us that, under the influence of popular control, nations that for many years were celebrated for the advantages they afforded in the way of instruction, have sunk to an amazing degree of inferiority. In one of the states of New England the population is increasing, and the school attendance is decreasing. Even in the most intelligent parts of the country the towns are incessantly trying to reduce the cost of the better class of schools by the elimination from the curriculum of science and languages, so that in a few districts it has actually been proposed to suppress all public instruction but that given in the primary schools. "We cannot help being struck," says M. Scherer, in 1883, "by the coincidence of these facts with the repugnance of the municipal council of Paris to favour the development of secondary education." † Another reproach levelled at democracies is the increasing mediocrity of their rulers. "It is in vain to deny," says M. Scherer, "that the masses are ignorant and incapable. They have no time for education." In fact, besides the tendency to mediocrity and the envy of superiority, one of the greatest dangers of a democracy is its passion for simple ideas and absolute principles. Having no time to reflect or to examine things in the complexity of their real details, a democracy is content with elementary and general ideas, upon which it bases its opinion on all subjects. Now, if the mediocre and simple minds are to decide matters of instruction, if, moreover, they fashion after their own image and for their own use a mediocre and commonplace system of useful languages and useful sciences, what will become of the higher culture? The *liberal* spirit must be maintained in a democracy, and we must therefore struggle against political or religious party spirit. If education, as in France, is almost entirely popular and primary in its character, the liberal spirit will be gradually enfeebled ; reactionary and clerical influences on the one hand, and demagogic and socialistic influences on the other, will divide the masses, and each side will be as tyrannical in its tendency as the other. But our classical schools, on the contrary, are the focus of liberal ideas, and are therefore the safety of the democracy, which, without them, is handed over to the demagogy or despotic reaction which every demagogy provokes. This principle being laid down, if we suppress in our secondary schools what is in a measure the sensible criterion of a liberal secondary system, and which in the instincts of the masses visibly differentiates it from primary higher instruction—I mean Latin, etc.—we shall see the municipalities abandon the secondary schools (which cost money to support) in favour of higher primary instruction (which is supported by the State). It will be in vain to speak of *classical* and literary instruction, for neither parents nor their representatives on the local councils will see the necessity of purely national literature. They will put in their main claim for useful and "professional" science ; and if enough science is not given them, they will be content with free primary instruction and its transformations. The sectarian schools, taking the place of the classical schools, will alone profess to keep alight the sacred fire. Unfortunately, this will be to the advantage of a narrow faith and of a political party. Consequently, the so-called democratic instruction will ruin the democracy.

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* *North American Review*, February, 1883.

† "La Democratie et la France," p. 110.

I think I have shown from reasons not merely pedagogic, but national and international, the necessity of maintaining the classics as the basis of secondary instruction, especially among neo-Latin races. I have been unable to admit the force of any of the reasons put forward for destroying the unity of secondary instruction, either by bifurcations into so-called equivalent types, or by separations, or by successive "cycles," permitting students to prematurely abandon a complete course of studies. Secondary instruction must not use the finances at its disposal for the purpose of cutting itself into sections of an invariably inferior quality. This would be gradual disorganization substituted for organization. We must not by a specious paralogism proceed from the premiss of the necessary diversity of hierarchic degrees of instruction to the necessary diversity of the same degree of instruction—secondary and liberal education.

A "French" education, with the addition of science and modern languages, may be useful to a large number; but if we rank an *incomplete* classical training as equal to a *complete* classical training, the former will favour the utilitarian tendency of the middle and lower classes. It will attract those who, supposing it easier and shorter, will consider it also equal to the latter in dignity and results. The end will be the movement of secondary instruction as a whole, not towards higher but towards primary instruction.

IV. The last conclusion to which I have arrived in this volume is that if we do not wish secondary instruction to become disorganized, if we understand that the continual increase of theoretical subjects of knowledge and practical necessities threaten us with a genuine intellectual and even moral chaos, and that in order to strengthen that instruction, we must simplify, and at the same time unify it, it follows that its organization must be philosophical, for it can no longer be religious. An education which does not combine synthesis and analysis has really but one name—*dissolution.* Life makes no progress without a close organization of materials borrowed from without, by their reduction to a unity of type, aim, and function.

Without introducing a course of philosophy into every class in literature and science, we should, and we can, infect each class with the philosophical spirit. The elementary teaching of physics and the natural sciences should comprise an elementary conception of cosmology, which is the simplest form of philosophy. The idea of nature and its great laws should spring into being in the child's mind; we should feel that admiration of the *cosmos* which English philosophers call cosmic emotion. Besides, the teaching of history, literature, and morals should lead, in a very elementary form, to what the Germans call a philosophy of the mind; we must make the child grasp the connection of the laws of moral and social progress with those of life and nature. He will thus acquire the sentiment of the ends of individual and collective existence, the sentiment which is the higher rule of life. In a word, to get a rule of conduct from science, we must weld an indissoluble link between principles of the moral order and the laws of existence.

Every lesson should therefore commence by showing the theoretical and practical grandeur, the beauty, and the philosophical interest of the question under discussion, and its moral or social importance. And similarly, every lesson should end with general, elevated, and philosophical conclusions. If the development of the different faculties, and principally of the imagination and reason, varies with age, it must always be as simultaneous and convergent in education as in life itself. Condillac has clearly shown that the faculty of reasoning "begins when our senses begin to develop." Locke, in his turn, advises reasoning with children, "because they can understand reason as early as they do language."* All subjects should therefore be reasoned, reduced to first principles, and orientated to an end of which the young can see the importance. Thus will they be inspired with a love and respect for the science they are studying.

In mathematics, for instance, it is well to make the lessons more attractive, to throw more light upon the subject, to clearly mark the connection and relative importance of theorems, and not to treat everything on the same plane. Teachers in our days still continue to exhibit in the abstract a rectilinear series of theorems without distinguishing essentials from accessories; geometry thus becomes a monotonous chain, all its links being of equal value. The master, on the contrary, should call the attention of the student to the *beauty* of the theorems, and even make him admire them, especially those theorems which are to geometry what the dominating organs are in physiology. And it is well to name the inventors of these beautiful theorems if opportunity offers. For instance, that the three angles of a triangle are together equal to two right angles, that the homologous sides of equiangular triangles are proportional, that angles in a semicircle are right angles, are certainly beautiful theorems, of infinite fertility, possessing, moreover, an æsthetic value from the laws of symmetry, constancy, and proportion they reveal, and from the *rôle* they play in the art of design; why, then, should they be expounded with the same impassible coldness as all the rest, as dead abstractions, as uninteresting truths, as like one another, as unilinear and monotonous as 8 + 3 = 11, 12 + 4 = 16, 13 + 4 = 17, etc.? Why not name the discoverer of these three theorems, when it is also the name of a philosopher whom the boys should know—Thales, the Greek? Is it lost time to interest them historically and æsthetically in these theorems? Quite the contrary; time would be gained by this apparent digression, for, thanks to this intelligent and interesting *memoria technica*, the boys would not forget the theorems, and if they did, they still would have retained, so to speak, their spirit and educative substance.

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* "Some Thoughts concerning Education," § 81, p. 125, fifth edition (*Tr.*).

Similarly, *apropos* of such an apparently thankless subject as numeration, is time lost by showing the lads the steps by which humanity reached the present system?—if we speak of the tribes whose numeration did (or does) not extend beyond three, and who, powerless to express higher numbers, put their hands to their hair as a sign of infinity; if we show them, in the Sanscrit and Greek forms of the singular and plural, the remains of an age in which they counted only "one," "two," and "many;" if we tell them that, starting from one and two, the word "three" originally meant "more than two;" four, three and one; five, the hand; ten, twice five, two hands; if you remember in Homer Proteus counting his flocks of walruses by fives (the quinary system); if you show how numeration advanced but a little further among the Greeks, who did not go beyond the *myriad;* if you add that Archimedes invented his *arenarium* to assist himself in speculating on large numbers—for instance to compute the number of grains of sand in the earth; that languages and especially modern budgets have alone brought into use and made familiar such terms as "millions," etc., that the words "billion," "trillion," etc., were invented in the sixteenth century; that a septillion is far beyond human conception, and that if, as Mr. Crookes calculates, the figures of which it is composed were defiling past us at the rate of one hundred millions a second, the passage of this amazing multitude would take 408,501,731 years, *i.e.* possibly longer than the solar system has existed; finally, that if a man were to devote his whole life to writing out a list of all the numbers, he would barely be able to write a million millions? The teaching of science would be really educative, if, as we have shown, it thus appealed to the imagination, to the sentiment, and to the reason, instead of merely to the memory and to automatic reasoning.*

Show how numeration hastens the march of thought, first by addition, and then by multiplication, an abbreviation of a series of additions, and then by raising to powers, which abridges a series of multiplications. "Numeration," it has been said, "advances step by step, addition by leaps, multiplication by bounds, and powers, as it were by a kind of flight."† Perhaps a child learning multiplication will have less desire to yawn if he feels his mind is gaining power, and that his thought is finding wings. The history of figures is also very interesting; every figure is like an individual with its biography, and not the dead sign which children alone see in it. The zero for instance, has its "Odyssey;" the introduction of the negative sign was nothing short of a revolution. Why not tell its history to children? No doubt they will forget the details, and of course we must not overload their memories; but an impression will remain behind—an impression of interest, even of pleasure; the abstract ideas thus introduced into their minds by concrete paths will be engraven upon them and will never disappear. In a word, and we cannot repeat this too often to science as taught in schools, "Humanize thyself."

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* Cf. Book II.

† M. Bourdeau, "Théorie des Sciences."

On the other hand, literature and history are mainly valuable because of the modicum of social science and of the yet ambiguous morality and vague philosophy therein contained: why not throw these educative elements into relief? The only way of replacing ideas in literary and æsthetic form is, I repeat, to borrow them from mental science. The basis of literature is, in fact, eminently social, moral, metaphysical, and religious; the natural sciences only contribute their most general results, their great laws, the part of their content which is philosophical and for that reason at once universal and human. Empty phrases and futile declamation will not be avoided because we happen to know the laws of combination of acids and bases. Moral and social science must constitute the basis of education, and it is a dangerous error to take as a basis either mathematics (being formal) or physics and the natural sciences, which are lost in the material of things.

The remedy for the present evils is not the further degradation but the elevation of our instruction; literature and science touch at their summits, and their point of contact is philosophy, the common crown of the *humanities* with man as their object, and of the sciences which have as their object the external world. We have seen among studies of the present day that the only subject that is prospering, in spite of what has been called the "general bankruptcy of education," is philosophy. "Our boys," writes M. Lachelier, in his report to the Higher Council, "follow philosophical instruction with interest and assimilate it with a facility which has been noted in the general inspection of this year." It is not only because, in recent years, instead of decreasing, they have increased the work in philosophy (at least in the case of students taking up literature), and because philosophy is more in harmony with the youthful mind than the mere study of words and phrases; but also and especially because the teachers of philosophy have from their very training a little more of that passion for the progress of ideas and for mental culture or, in a word, of that lay and civic apostleship which is essential in every educator of youths. There is in French philosophy a forward movement, and in the profession our young teachers of philosophy are among the most beloved and respected. Let us take advantage of this healthy enthusiasm, and if something is living and bearing fruit amid the stagnation of classical instruction, let us look towards that side on which are to be found enthusiasm, fruitfulness, and guiding influence.

Successive reforms have been attempted in secondary education in France; first a reform in the direction of the sciences—on which nothing was poured but contempt; then reform—historical and philological—and more contempt; and finally industrial and professional reform, a greater blunder still. One resource alone remains—philosophical reform; *i.e.* the common co-ordination of literature and science with reference to psychology, and moral and social science, the foundations of the true humanities. This orientation to philosophy is an imperative necessity of the day; *savants*, men of letters, historians, and geographers should all aid us in our efforts; for there are none of them able by their own particular subjects to furnish a basis for modern education. If the religious basis is wavering, there is but one possible way of supplying its place, viz. the culture of the moral and social sciences, the culture of philosophy—especially of a philosophy at once positive and idealistic. To suppose that pure science or literature is sufficient to replace the old creeds is idle. Even philosophy and sociology will have all they can do to bring the struggle against the ever-growing realism and utilitarianism of the age to a successful issue. The day is coming, say the prophets, when France will contain little else but priests, poets (if they understand their mission), and philosophers; what bulwark will there be for our national greatness, but the sentiment of the beautiful, developed by poetry and art, and the sentiment of the good, developed by the knowledge of moral and social laws? Whatever may be the value of these prophecies, one thing is at present certain—the evident decrease of religious belief must be met by the increasing culture of the æsthetic, and of the moral and social sense. Education, becoming less and less theological, must be philosophical, or it will cease to exist.

APPENDIX I.

HOW TO COMBINE A CLASSICAL TRAINING WITH THE STUDY OF ECONOMIC AND INDUSTRIAL SCIENCE.

I SHALL attempt to show the possibility of reconciling with the study of Latin and Greek a system of instruction less formal, more scientific and practical, and at the same time more philosophical, moral, and civic, than that which at present obtains—responding better to the "needs of modern societies." I shall endeavour to effect a better distribution of work in the existing time-tables, and so to introduce therein all that our reformers dream of under the name of "classical French instruction." I shall also try to combine with the study of literature and philosophy a sound training in either mathematical or in physical and natural science. In a word, my object is to orientate the whole course towards moral and social science, without any very radical change in the present system.

I. Up to twelve years of age I propose no alteration, keeping Latin, which should be begun early, in its present position. The reformers propose to make children begin Latin at eleven, and they appeal in support of this proposal to the example of those individuals who have learned Latin in a few years. Thus they want to treat Latin as a living language, which the student learns to *know* and to *use;* they simply want to add one more to the many subjects that have to be crammed during the last years of school-life. This is a new instance of pedagogic aberration; Latin loses all its virtue—its gradual development of the intellect and taste—if it is reduced to a linguistic indigestion of two or three years, as a mass of words and phrases to be lodged in the storehouse of the memory. Thus understood and falsely assimilated to the study of a modern language, the study of Latin would be more harmful than useful.

Starting from children of twelve to thirteen, I propose the following modifications:—

Latin, Greek, the mother tongue, six classes of 2 hours and one class of 1 hour = 13 hours per week.

Modern languages, one class of 1½ hour and a lecture, without exercises, etc.

Arithmetic, geometry, two classes of 1½ hour = 3 hours.

Roman history; general geography, one class of 1½ hour.

Special subject in geography—America.

Drawing, one class of 1 hour.

Thus we give an extra half-hour to drawing, and combine history and geography in a single lesson of an hour and a half. The course in geography is a repetition of what has been learned in the previous year, and it is therefore unnecessary to devote to America more than a whole hour per week for an entire year. In the higher divisions, for students intended for industrial and commercial life, we return to America, a profound study of the geography of which is really only useful to such students.

FROM 13 TO 14 YEARS OF AGE.

		Hours.
Latin, Greek, the mother tongue	6 lessons of	2
Modern languages	1 „ „	1½
(and a lecture without preparation on part of student)		1
Algebra and geometry	1 „ „	1½
Physics	1 „ „	1½
and	1 „ „	1
History of Middle Ages; geography of Africa, Asia, and Oceania	1 „ „	1½
Drawing	1 „ „	1
Optional lessons in science for students who have a scientific career in view.		

Here, as before, the history of the Middle Ages (of but moderate interest) and the geography learned at an earlier period are combined in one lesson, and will be studied in detail later on by students on the commercial and industrial side. The time allotted to physics is ample enough to give a fundamental instruction in science to all pupils.

From 14 to 15 Years of Age.

		Hours.
Latin, Greek, and the mother tongue	6 classes of 1 ,, ,,	2 1
Modern languages (with a lecture of 1 hour)	1 ,, ,,	1½
Physiology (with 12 lectures on hygiene)	1 ,, ,,	1½
Morals		1
History of Middle Ages and of modern times. Geography of Europe	1 ,, ,,	1½
Drawing (optional)	1 ,, ,,	2

Lectures in science to be arranged for science students, and these students may also take science in one of 2 hour lessons devoted to Greek per week.

Now, by this scheme, at fourteen or fifteen years of age, a general instruction has been given to all boys, and those who are intended for a scientific career may devote to science the rest of their school-life. Pupils destined for literary pursuits have already learned a good deal of science, and fair preponderance has been given to mathematics and physics.

On the other hand, students in science have already given four years to Greek. This will certainly answer its purpose, and will be superior to what the science students of former days had had on leaving school. From sixteen to seventeen a lecture in Greek per week will be quite enough to keep them from forgetting what they have learned. Finally, all students will have received fundamental instruction in modern languages.

As soon as the age of sixteen is reached, the student will, as a rule, have made up his mind as to his future career. We can therefore introduce during the last two years of school-life sundry accessory subjects without prejudice to the unity of the fundamental subjects. From fifteen to sixteen, Greek becomes a special subject, not required from all students, and the time allotted to Greek may be devoted to other subjects.

Instruction to Pupils from 15 to 16 Years of Age.

Classes in Fundamental Subjects, common to all Students.

	Hours.		Hours.
The mother tongue	4	Modern history and the geography of the mother country	1½
Latin	4		
Modern languages	1½		

Special Course for Students in Literature.

	Hours.		Hours.
Greek	4	Cosmography and chemistry	1½
Æsthetics and the history of art	1	Extra history and geography	1½

Special Course for Students in Science and Mathematics.

	Hours.
Mathematical and physical science	7½
Extra class in German (or French)	1
Revision of Greek (lectures)	15

Special Course in Physics and Natural Science.

	Hours.		Hours.
Mathematics	2	Extra lecture in modern languages	1
Physics	2	Extra lecture in Greek, 15 lectures.	
Chemistry	1½	Practical chemistry.	
Natural history	2		

Special Course in Economics and Industrial Science.

	Hours.
Extra lessons in modern languages	3
Commercial and industrial geography of Europe and of the mother country	1
Mathematics—algebra, descriptive geometry, mechanics	2
Physics and applied chemistry	1½
Book-keeping, etc.	1
Revision of Greek	15 lectures.
Practical chemistry.	

INSTRUCTION TO STUDENTS FROM 16 TO 17 YEARS OF AGE.

Fundamental Subjects taken by all Students.

	Hours.
Philosophy (psychology, the main conclusions of logic, first principles and final conclusions of ethics, natural and mental philosophy)	5
Contemporary history	1

Course for Students in Literature.

	Hours.		Hours.
Extra classes in philosophy. History of philosophy. Greek, Latin, and French (or English, etc.) philosophers	3	Common law	1
Political economy	1½	Revision of mathematics	1½
Civic and political instruction	1½	Revision of physics	1½
		Drawing (optional)	1½
		Modern languages (lectures, optional)	1

Course for Students in Mathematics.

	Hours.
Mathematics and physical science	12
Modern languages	1½

Special Course for Students in Physics and Natural Science.

	Hours.
Mathematics	2
Physics and organic chemistry	2
Botany	2
Modern languages	1½
Political economy and social science (in common with students of literature)	1½
Civic and political instruction (in common with students of literature)	1
Common law	1
Drawing (optional)	1

Here I add to physical and natural science a modicum of moral and social science, as I cannot admit that the requirements of the faculty of medicine (for instance) are so exacting as to necessitate the sacrifice of moral and social science to botany and chemistry, which already are taking up more time than is needed. A doctor exercises a social influence which renders imperative a knowledge of social economy, politics, and common law. Our future doctors should have a really liberal and civic education.*

Special Course for Students in Economic and Industrial Science.

	Hours
Modern languages	3
Mathematics, book-keeping, etc.	2
Physics and organic chemistry	1½
Political economy (in common with the students in literature)	1½
Civic and political instruction	1
Legislation	1
Industrial, commercial, and rural economy (for the first half-year)	1½
Geography (industrial and commercial) of America, Asia, Africa, Oceania (for the second half-year).	
Optional lessons in drawing, modern languages, book-keeping, etc. Practical chemistry.	

On considering the subjects suggested for students intended for commercial and industrial life, we see that they are ample for the purpose; they only require completion by technical instruction to become a liberal and utilitarian preparation for industry and commerce. The part assigned to living languages is wide enough to allow of a sound study of one fundamental language (French or German) and of the acquisition of primary notions of a complementary language. More cannot be expected at school; and those who will take the more responsible positions in the world of industry and commerce cannot dispense with residence abroad for the purpose of learning languages. Enough industrial and commercial geography is taught to familiarize the student with the great producing towns and the great markets. Political economy, civic instruction, constitutional law, and legislation have their due share of time. I have merely given to economic and industrial science its legitimate *rôle* without prejudicing classical culture.

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* Here I keep in their true place moral and social science, which in the higher walks of industry and commerce are absolutely necessary, because of the social influence of great manufacturers and merchants.

II. The spirit and the letter of the programmes must be reformed, details too technical for our purpose must be suppressed, and we must add general, philosophical, and historical ideas, adapted to throw light on each study and to make the student understand the end in view.

GENERAL OBSERVATIONS ON THE TEACHING OF SCIENCE.

The teacher, as J. B. Dumas recommends, must make the teaching of science play its part "in mental culture, and must make it educative."

His object will therefore be not to make the student learn much, but to make him learn what is necessary and what is beautiful. Instruction in science will teach (1) a few accurate and characteristic facts selected from the most familiar; (2) the most general and most beautiful laws of science; (3) the principles and conclusions of science, and the most general ideas to which we are led by particular facts. All should be both interesting and systematized.

The teacher must also give as interesting a sketch as possible of the great discoveries. He will avoid abstract explanations, but not the general and even philosophical views which arouse the interest and widen the mental horizon of the young.

The teacher will never dictate his lesson; at most he will dictate a summary as accurate and as brief as possible.

He will also avoid mechanical repetitions of his statements.

As exercises he should require short essays on some determined subjects; or an account of an experiment with all its more important consequences; or a series of written answers to interesting questions; or, finally, one or more easy problems for solution.

The active method must always be preferred to the passive.

"The more complicated details," says Dumas, "should be left for the higher instruction given to our future *savants*, and the teacher should limit himself to the exposition of *those simple ideas which everybody will need*." Dumas also rightly insists upon a change in our method of teaching natural science by processes and school apparatus. Instead of studying the great book of nature, we limit ourselves to experiments with expensive apparatus, the mechanism of which—as complicated as it is unnecessary—masks the thoughts of the inventor and discourages imitation. "The teaching of physics is too often controlled by the apparatus-makers. . . . What could be more simple than the means employed by Volta, Dalton, Gay-Lussac, Biot, Arago, Malus, Fresnel, etc., when they were laying the foundations of modern physics? . . . Physics must not lower its ideal, nor should it forget to teach an admiration of cosmic phenomena and laws; as taught at present, it simply concentrates the whole of the attention of the student upon the apparatus employed for exact measurement or for the ascertaining of those laws."

A very short summary of each science should be placed in the hands of pupils as a text-book. An appendix should contain interesting chapters on scientific subjects, and a history of the great inventions and inventors.

It would be advantageous if such text-books were compiled in collaboration by a teacher of science and a teacher of philosophy. The special knowledge of the former is indispensable; the latter—besides his literary and philosophic training in the art of composition, writing, and teaching—would bring to the subject general and synthetic views, careful simplifications, and finally the desire to make the whole tend to the promotion of intellectual and moral education.

The following suggestions are made as to the reforms which are needed in the programmes at this stage.

Introduction to the Programme of Physics.

1. Elementary notions of extension, motion, force. Matter and its qualities. Our ignorance of the essence of matter. A few notes on the atoms of Democritus and of Epicurus; on the importance attached by Descartes to the idea of extension, and by Leibnitz to active force. The modesty of the true *savant.*

2. The different states of matter.

3. Direction of gravity. Centre of gravity. Weight. The balance. Galileo. The rules of observation in physics.

4. Universal gravity. Descartes, Newton, Laplace. The rules and the importance of *hypothesis* in physics. Beauty of the Newtonian hypothesis.

5. Hydrostatics. Archimedes, Pascal. Free surface of liquids in equilibrium. Equality of pressure in all directions. Pressure on the sides of vessels. Vessels connected with each other.

6. The law of Archimedes. Specific weight. The Areometer.

7. Atmospheric pressure. The barometer. History of its invention.

8. Mariotte's law. His experiments. Rules of *experiment* in physics. *Methods of experiment. Induction.* Examples taken from the previous sections.

9. Pneumatic machines. Pumps. Pascal's hydraulic press.

10. Syphon. Ærostats. Their history. *Rôle* of *deduction* in physics, etc.

The programme to be continued in this manner.

Introduction to the Programme in Chemistry.

Chemistry; its importance, beauty, utility, and various applications.

A succinct and interesting sketch of its origin and progress. The *sacred art* of the Egyptians.

Arabian *alchemy.* Raymond Lulli. Paracelsus. Van Helmont. The eighteenth century. Chemistry in England. Priestley and the English chemists.

Introduction to the Course in Zoology.

What is nature? Its grandeur and beauty.

What are the natural sciences? Define the principal natural sciences: Zoology, botany, geology. The importance, interest, and utility of the natural sciences.

Observation in the natural sciences. Qualities of the observer.

Analogy in the animal kingdom. Utility and variety of animal types. Fecundity of type.

A few remarks on the most celebrated naturalists: Aristotle, Linnæus, Buffon, Jussieu, Cuvier, Lamarck, Geoffroy Saint-Hilaire, etc.

England and her great naturalists.

Introduction to the Course in Geology.

Object of geology; its importance, interest, and application to industry. The earth, its history, etc. A few great English geologists.

Notions on the successive appearance of different groups of animals and vegetables.

Very general and simple reflections on adaptation to the environment, or the struggle for existence among animals, on the progress of living species from vegetables and zoophytes to man.

Introduction to the Course in Botany.

Object of botany; its beauty, importance, utility, and practical applications.

Great botanists. The part played by England in the progress of botany.

The meaning of *classification* in natural sciences. Beauty of natural classification. How it reproduces the actual order of nature, the true resemblances and differences of beings, etc.

Introduction to the Course in Arithmetic.

The science of numbers; its beauty, importance, necessity, and application in science, industry, and commerce. Numbers govern the world. The wonderful laws and combinations of numbers. The sages of antiquity and their interest in the laws of numbers: Pythagoras and Plato.

Great English mathematicians. England and the progress of mathematics.

Explanations of numeration and the decimal system should be accompanied by interesting historical details—the origin of the ordinary scale of notation, the invention of figures, their form, the decimal and metric systems, etc. In general, add to the absolutely necessary abstractions as many concrete instances as possible, and insist on the interest of practical applications.

Introduction to the Course in Geometry.

What is mathematical science? Numbers and extension. Arithmetic and geometry.

The beauty of geometry; its importance and practical necessity. Rapid sketch of its origin and progress. Egypt and Greece. Thales, Pythagoras, Plato, Euclid. English geometers. French geometers: Descartes, Pascal, Monge. German geometers: Leibnitz.

Methods in geometry. Definitions, axioms, constructions, demonstrations.

What is reasoning by deduction? Imagination in geometry. The geometrical spirit; its advantages and drawbacks. Pascal on the geometrical spirit and subtlety of thought. Can everything be reasoned geometrically?

N.B.—To mention Pythagoras and the Indians in connection with Euc. i. 47. Euclid and the successive efforts of geometers *apropos* of the postulate of parallels. "To teach geometry apart from its history, and making a *tabula rasa* of the past, is not without its disadvantages" (J. B. Dumas). Do not neglect its practical applications—in mensuration and industry. Make problems as interesting as possible; as, for instance "Find the height of a mountain," . . . or, "Find the distance of the earth from the moon. . . ."

Introduction to the Course in Algebra.

Algebra; its importance, beauty, utility, and practical applications. The power it gives to the human mind. Sketch of its origin and progress. The school of Alexandria; the Arabs. English algebraists. French algebraists. Note: Maria Agnesi in the eighteenth, and Sophie Germain in the nineteenth century among women who were able algebraists.

Introduction to the Course in Cosmography.

Astronomy; its importance, beauty, and utility. Sketch of its history. The Chaldeans and Egyptians. The Greeks: Thales, Pythagoras. The school of Alexandria, etc.

N.B.—This course should be rather given to a physicist than to a mathematician, for the latter has a tendency to reduce astronomy to abstract theorems.

Introduction to the Course in Latin.

Why we learn Latin and Greek. Relation of Latin to English.

Beauty of the Latin language. Beauty of the Greek language.

Influence of Latin and Greek literature upon English.

Latin the language of Christianity.

Utility of Latin: (1) to develop mind and taste; (2) to learn to write English. National and patriotic character of the study of Latin. Latin and Greek, and their place in education in Germany and France. Reasons why neo-Latin races should not be behind Anglo-Saxon and German races in the study of the classics.

The principal linguistic exercises: (1) grammar; (2) translation; (3) exercises; (4) commentary on texts; (5) composition. Their use. How interesting they are when the student sees their importance and utility.

N.B.—Only choose fine passages for translation. Always comment on the texts translated from the point of view of literature, history, and morals.

Introduction to the Course in Modern Languages.

Parents should choose the languages taken by the student, and give a definite reason for their choice.

A circular should be sent round, laying before the parents the advantages of the different languages and their practical application; the parents should then choose the languages best adapted for the future career of their children.

Introduction to the Course of History.

1. Definition of history; its place in moral and social science; its importance and utility. Educative value of history: (1) it contributes to intellectual education by cultivating the imagination, to which it presents "real but varied and picturesque objects," by accustoming the mind to discernment, appreciation, and judgment of facts, persons, ideas, epochs, countries, etc.; (2) it contributes to moral and political education, by laying down the experimental bases of social science.

2. Method of establishing facts by evidence, documents, monuments, etc. Criticism of human evidence: (1) judicial facts; (2) historical facts; (3) in matters of belief (criticism of fables, legends, mythology).

3. Methods of history: (1) in explaining facts by means of their general and particular causes; (2) judgments of facts according to the principles of moral, social, and political science. Meaning of "the philosophy of history." Danger of abstract historical systems.

4. Summary of the development of historical studies from antiquity onwards. The great historians. Qualities necessary to the historian; faults he must avoid.

Introduction to the Course in Geography.

Geography; its importance and utility. How it develops: (1) the imagination, by the pictures it presents to it; (2) the reasoning powers, by the explanations it affords of the political, commercial, and industrial history of different nations; (3) the moral sense, by exhibiting the struggle of man with nature; (4) the civic sense, by exhibiting the resources and the field of action of England, with the competition of her neighbours.

COURSE IN ÆSTHETICS, LITERATURE, HISTORY OF LITERATURE AND OF ART.

Define æsthetics. Beauty and interest of æsthetics.

The beautiful. Relation between the beautiful and the true. The beautiful and the agreeable. The beautiful and the good.

The sublime. Grace.

Laughter and the ridiculous. The comic.

What is art? Expression in art. Idealism and realism in art. The various arts.

Architecture. Short abstract of the history of architecture. Greek and modern architecture.

Sculpture. Short abstract of the history of sculpture. Sculpture in modern times.

Painting. Short abstract of the history of painting.

Music. Short abstract of the history of music.

Poetry. English poetry.

Epic poetry. Lyric poetry. Dramatic poetry: tragedy, comedy, the drama.

Eloquence. Rhetôric; its dangers.

Invention. Demonstration and its general rules. Sophisms of the mind and heart.

General rules of composition.

Style. The different literary styles.
Progress and decadence in the arts.
The transformations of art. Classical and romantic periods.
Conclusions: moral and social *rôle* of art.

Course of Ethics.

Vide p. 215.

COURSE IN POLITICAL ECONOMY.

Introduction.

Political economy; its object, importance, and beauty. The growing need for political economy in modern and democratic societies. Its relations with other sciences—notably with law.

Divisions of political economy: production, distribution, circulation, and consumption of wealth.

1. PRODUCTION OF WEALTH.—*The elements of production*:—

i. Law and natural agents.

ii. Work and industry: organization and freedom of work; historical summary; corporations. Classification of the various industries. Commerce. The middleman.

iii. Capital legitimate and necessary. Different kinds of capital. How thrift accumulates and makes capital.

2. DISTRIBUTION OF WEALTH.—i. *Property.* Private property; account and reputation of the principal systems condemning it; the origin of intestate succession and the law of testament.

ii. *Conventions.* (1) *Farming.* Rent of the soil. Different systems of culture; large and small culture; disadvantages of too minute a division, and of too great a concentration of property.

(2) *Capital, and its part in the division of wealth*; interest; legitimacy of interest.

(3) *The part of the middleman.* Profits.

(4) *The part of the working man.* Application to labour of the law of supply and demand.

Wages. Sharing in profits. Trades unions. Co-operative associations.

(5) *Socialism*; its various forms. Criticism of socialism.

Population and the distribution of wealth. Poverty and pauperism. The struggle against pauperism.

3. CIRCULATION OF WEALTH.—i. *Exchange*: its different forms.

Value. Price. Laws regulating the fixing, variation, and equilibrium of prices. Competition. Monopolies.

ii. *Money.*

iii. *Credit.* How it takes the place of money, and is a source of wealth. Credit and thrift. (1) Private credit: banks; (2) Public credit: its bases; state loans.

iv. *External and internal commerce.* Commercial crises; their causes and remedies. Imports and exports. Markets. Balance of commerce; regulated by cash or by international funds. Free trade; protection and prohibition. Commercial treaties. Customs. Bonded warehouses. Auctions.

4. CONSUMPTION OF WEALTH.—i. *Thrift:* its resources, foresight. Insurance of life, against fire, and against accident. Savings banks. Friendly societies.

ii. *Luxuries.*

5. APPLICATION OF POLITICAL ECONOMY TO FINANCIAL LEGISLATION.—i. *Taxes*: Different kinds of taxes. Proportional taxes. Sliding scale of taxes.

ii. *The Budget:* How constructed. The budget vote.

The teacher must avoid giving his lessons an abstract character; he will confine himself to teaching his pupils—in proportion to their age—elementary economic facts, and how from these facts we get certain general laws, and the value of these laws in commercial, social, and industrial crises.

COURSE OF CIVIC AND POLITICAL INSTRUCTION.

Social and political science in its old sense. Its increasing importance; its beauty, necessity, and difficulty. Its founders: Plato, Aristotle, Locke, Montesquieu, Rousseau, Comte. Its future. Its method—experimental and rational.

1. IDEAL POLITICS.—Ideal politics, or the determination of the end society should keep in view. The good of the individual or the State? Should the individual and the State pursue the good, the virtuous, liberty, and justice? Ancient and modern politics.

Relation of ideal politics to psychology, ethics, and natural law. Distinction between politics and ethics.

The necessity (1) of an ideal conforming to the true moral aims of humanity; (2) of an adaptation of that ideal to reality.

2. REAL POLITICS.—Real and experimental politics, or sociology properly so called. The different organs and func-

tions of the social body, and the laws of their evolution. The extreme difficulty of social science; the spirit of reserve which must ensue in social and political questions.

The most important laws of equilibrium and conservation in societies—social statics.

The most important laws of the development of societies—social dynamics.

3. THE STATE.—Distinction between the *State* and the *government.* Origin and attributes of government. Individual liberty and *national sovereignty.* The true and false sense in which the *national sovereignty* may be interpreted. Danger of abstract and absolute systems.

Different powers of the State: *legislative, executive, judicial.*

Organization of the legislative power; ideal principle of unanimity; the necessary substitution in practice of the principle of majorities for that of *unanimity.* The rational basis and rational limits of the power of the *majorities.* Respect due to the rights of *minorities.*

System of the two houses; its rational and historical basis.

Organization of the *executive.* Different *forms of government.* Their advantages and disadvantages. Rational and philosophical character of a limited monarchy; its advantages, difficulties, and the peculiar qualities it requires in the citizens and governing bodies.

Organization of the *judicial* power of the State. Penality and its social basis.

Organization of the *military* power of the State. Defensive and offensive armies. Advantages and disadvantages of democratic armies; increasing necessity for military discipline in free countries; the duties of the soldier.

The evolution of governments; *revolutions,* their causes, inconveniences; how to avoid them.

Applied politics.—The difficulty. How they should reconcile the ideal, the real, and the possible. Comparison of applied politics with medicine or applied physiology.

COURSE OF LEGISLATION—PUBLIC AND CIVIL RIGHTS.

1. PUBLIC RIGHTS.—Law. Natural law. Positive law. Relation of ethics to law.

Divisions of law: (1) Public law (constitutional law, administrative law, criminal law, law of nations); (2) private law (civil law, commercial law). Codes.

i. *Rights guaranteed to the citizen.* Civil equality. Private liberty. Liberty of conscience. Liberty of labour. Liberty of union and association. Liberty of the press. The taxes. Military service.

ii. *Public powers.* Constitutional laws. Powers of the legislative and executive; how and why they are separated. The legislative and executive: king, lords, and commons. The executive: the prime minister and the cabinet.

iii. *Administrative organization.* County Councils. Local government.

iv. *Judicial organization.* Justice: public and free. Civil jurisdiction: (1) supreme court of appeal; (2) the law courts; (3) the county courts; (4) the magistrates and justices of the peace. Barristers and solicitors.

v. *General idea of criminal law.* Responsibility as recognized by the criminal law. Distinction between crimes, misdemeanours, and minor offences. The police courts. The police.

2. CIVIL RIGHTS.—i. *Persons and the family.* (1) *Nationality.* Status of foreigners. (2) *Constitution of the family*; how it is formed. Rights and duties in the family. Parental and marital authority. (3) *Protection of the weak*; guardianship. (4) *The principal facts in civic life:* birth, marriage, death.

ii. *Property.* (1) How acquired; inviolable (save in case of public utility). How it is lost. (2) *Debts*; different kinds of obligations. How the rights of the creditor arise; how guaranteed (privilege, hypothec, pledge).

iii. *Succession.* Different classes of heirs; descendants, ascendants, and collaterals. Division among children. How succession is acquired. Obligations of an heir; inventory; right of refusing succession. Wills; different kinds of wills; different kinds of legacies.

iv. *Defence of rights.* A summary of general notions on legal claims, procedure, proof, judgment; how a judgment is carried out; court of appeal.

We now come to the course of philosophy. Two hypotheses are possible as to the place of philosophy in a classical training. Philosophy may be left until the last year or so of school-life — crowning the school-course, and in that case the course of ethics at fourteen or fifteen, and of æsthetics at sixteen or seventeen, might be replaced by courses in science.

In this case we should divide the classes as follows:—

From 14 *to* 15.

	Hours.
English (3), Latin (5), Greek (4)	12
Modern languages	1½
Mathematics	1½
Animal and vegetable physiology	1½
History of the Middle Ages and of modern times; geography of Europe	1½

From 15 *to* 16. *Classes for all students.*

	Hours.
English	4
Latin	4
Modern history; geography of United Kingdom	2
Modern languages	1½

From 16 *to* 17. *Classes for all students.*

	Hours.
Philosophy (psychology, ethics, theory of knowledge and general philosophy; essays)	7½
Contemporary history	1

The following is the present course in philosophy, slightly modified:—

Philosophy (16 to 17). Course for all Students.

Introduction.—Science; the sciences, philosophy. Object and divisions of philosophy. Its speculative, moral, and social importance. Progress of philosophy from antiquity to the present day.

1. Psychology.—Object of psychology; character of the facts with which it deals; psychological and physiological facts. Impossible for physiology to include psychology. Moral and pedagogic value of psychology.

Method of psychology: subjective, reflection; objective, language, history, etc.

Experiment in psychology. Constant progress of psychology.

Classification of psychological facts: sensibility, intellect, will.

Sensibility. Pleasure, pain, sensation, sentiment. The inclinations. The passions. Moral and pedagogic deductions.

Intellect. Acquisition, conservation, and development of knowledge. Data of mental activity.

The senses. Consciousness. The problem of the unconscious. Memory. Association. Application to intellectual education.

The imagination. How cultivated. Abstraction and generalization. The judgment; pedagogic application.

Reasoning. Deduction, induction, analogy.

The will. Instinct, liberty, habit. Heredity. Limits of heredity; power of education, of ideas, of sentiments. Applications to pedagogy.

The expression of psychological facts: *signs* and language.

The relations of *the physical and the moral.*

Sleep, dreams, somnambulism, hallucinations, hypnotism, madness.

Brief abstract of *comparative psychology*; man and animals.

2. ETHICS.—*Principles of ethics.* The conscience, the good, duty.

Examination of utilitarian doctrines. What every science of manners can learn from them.

Examination of evolutionist doctrines. What every science of manners can learn from them.

The conditions of the most intensive and expansive life for the individual and for society.

Duties.—Duties towards ourselves: wisdom, courage, temperance.

Duties towards others: right, justice, charity (*vide* p. 215).

Duties towards the family.

Duties towards our country: obedience to the laws, instruction, taxes, voting, military service, patriotism.

3. GENERAL PHILOSOPHY.—i. *Criticism of Knowledge.*

Origin of knowledge. Guiding principles of knowledge. Can they be explained entirely by experience, association, or heredity?

Value of knowledge. Dogmatism, scepticism; criticism of Kant.

Limits of knowledge. Different theories on this subject. Kant's critical philosophy.

Comte and positivism. Spencer and the unknowable.

ii. *Philosophy of Nature and Cosmology.*

Of nature in general. Different conceptions of matter and life.

The great hypotheses to which the sciences of nature lead us.

Inadequacy of these hypotheses for the solution of the enigma of life.

iii. *Mental Philosophy.*

Materialism, spiritualism, idealism.

Religious beliefs. Their speculative *raison d'être;* their moral and social importance.

Speculative and moral reasons on which beliefs in God of every form are based.

The problem of evil. Optimism and pessimism. The moral reasons upon which every belief in the final triumph of good or in a Providence is based.

Speculative and moral reasons upon which belief in the immortality of the soul is based.

Conclusion. Progress of philosophy from antiquity to the present day. The "perennial" character of philosophy.

N.B.—The teacher must bear in mind the calibre of his class. In psychology he will not touch on the very difficult or subtle points on which there is divergence of opinion, but will confine himself to throwing into relief the main results of psychology. He will give psychology a practical bearing by showing its application to education. In logic he will keep to the essential theories which are admitted by all philosophers. Similarly in ethics he will keep to such points as are maintained by the partisans of both the evolutionist and the *à priori* schools, and will give to his course an eminently social and civic bearing. In general philosophy and metaphysics he will exhibit the common points of beliefs rather than their divergence; he will avoid the euristic method, the abuse of thesis and antithesis, and the extremes of controversy. He must take a broad view of the whole subject, and confine himself to "principles." His end, in a word, must be educative and adapted to the young. Without depriving philosophy of its lofty speculative character, he will give to his course of lessons a practical bearing. He will consider himself not as a mere *savant*, but as the principal lay representative of great moral and social interests in the education of the young, and as having, *ipso facto*, in the well-known phrase, "a cure of souls."

Contrary to a widespread prejudice, I have sacrificed logic in the case of students destined to a scientific or industrial career. In the first place, I have already added all the essential part of logic to the different programmes for science classes; and, secondly, the study of science does not absolutely need completion by formal logic, while it ought to be supplemented by psychology, ethics, and general natural and mental philosophy.

SUPPLEMENTARY PROGRAMME FOR STUDENTS TAKING UP LITERATURE AND PHILOSOPHY.

I. Principles of Æsthetics.

The beautiful. The sublime. The graceful. The ridiculous.

Art. Expression, imitation, fiction, the ideal. Realism and idealism. The truth contained in each.

The different arts.

II. Logic.

Formal logic.—Terms; propositions; different forms of reasoning; notions admitted by all philosophers.

Applied logic.—Its progress from the earliest times. Method of the exact sciences—axioms, definitions, demonstration.

Method of natural and physical sciences—observation, experiment, hypothesis, induction.

Classification, analogy, empirical definitions.

Method in moral science—evidence; the historic method.

Errors and sophism.

III. Abstract of the Great Philosophical Doctrines.

Socrates, Plato, Aristotle; the Epicureans and Stoics; Bacon, Descartes, Locke, Spinoza, Leibnitz, Kant.

N.B.—The teacher must not go into details, and instead of laying stress upon the contradictions of the various systems, he must confine himself to showing the progress of ideas from one doctrine to another, even on points when a final solution is still wanting.

IV. Philosophers.—*English.*

Greek authors.

Xenophon. Short extracts from the "Memorabilia."

Plato. Short extracts from the "Republic and Phædo."

Aristotle. Extracts from the "Nicomachean Ethics," bk. x.

Epictetus. Extracts from the "Manual."

Latin.

Lucretius. Extracts from "De Natura Rerum."

Cicero. Extracts from "De Officiis."

Seneca. Extracts from "Letters to Lucilius."

If the course in philosophy is spread over two years, the student may take in the first year—(1) psychology; (2) æsthetics; (3) logic. The next year—(1) ethics; (2) criticism of knowledge; (3) general, natural, and mental philosophy; (4) history of philosophy and of philosophical authors.

If the course is divided over three years (as in Italy), the student will take the course of ethics at fourteen or fifteen, of æsthetics and logic at fifteen or sixteen. The study of æsthetics, logic, and psychology is valuable in rhetoric, because it gives depth to the mind and gives boys ideas for their essays, etc. True eloquence is an application of psychology, æsthetics, and logic.

III. For the Final Examination (on leaving School) in Literature and Philosophy (the B. ès L. et Ph.).

First Examination (15 *to* 16).

	Relative Values.
Latin translation (2 hours)	2
English essay on a subject in literature or history (3 hours)	2
An easy piece of German or French prose (1½ hour)	1
An easy piece of Greek translation (1½ hour)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Explanation of Greek author	1	History	1
Explanation of Latin author	1	Geography	1
Explanation of English author	1	Modern languages	1
General ideas of classical literature	1		

Second Examination (16 *to* 17).

	Relative Values.
Essay in philosophy (4 hours)	2
Essay on a subject in economic and political science or legislation (2 hours)	1
Paper on mathematics and physics (2 hours)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Philosophy	2	Politics and legislation	1
History of philosophy	1	Mathematics	1
Greek, Latin, and English philosophers	1	Physics and natural sciences	1
Political economy	1	Contemporary history	1

For Students taking up Literature and Mathematics (B. ès L. et Math.).

First Examination (15 *to* 16).

	Relative Values.
Latin translation (2 hours)	2
English essay on a subject in literature or ethics (4 hours)	2
Exercises in modern languages (1½ hour)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Mathematics	2	English	1
Physics	2	A modern language	1
Latin authors	1	History and geography	1
Greek	1		

Second Examination (16 *to* 17).

	Relative Values.
Essays: Philosophy (4 hours)	1
Mathematics (2 hours)	1
Physics (2 hours)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Philosophy	1	Physics	2
Mathematics	2	Contemporary history	1

For Students taking up Literature and Natural Science (B. ès L. et Sc.).

First Examination (15 *to* 16).

	Relative Values.
Latin translations (2 hours)	2
English essay on a subject in literature or ethics	2
Exercises in modern languages (1½ hour)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Mathematics	1	Greek	1
Physics	1	English	1
Natural science	2	Modern languages	1
Latin authors	1	History and geography	1

Second Examination (16 *to* 17).

	Relative Values.
Essays: Philosophy (4 hours)	1
Physics and natural science (4 hours)	1

Vivâ Voce.

	Relative Values.		Relative Values.
Philosophy	1	Mathematics	1
Economic and political sciences, legislation	1	Physics and natural science	2
		Contemporary history	1

For Students taking up Literature and Economic and Industrial Science (B. ès L. et Econ. et Indust.).

First Examination (15 *to* 16).

	Relative Values.
Latin translation	1
English essay on a subject in literature or ethics	1
Exercises in modern languages	1
Paper on mathematics	1

Vivâ Voce.

	Relative Values.		Relative Values.
Mathematics	1	English authors	1
Physics and natural sciences	1	Modern languages	1
Latin authors	1	History	1
Greek authors	1	Geography	1

Second Examination (16 *to* 17).

	Relative Values.
Essay on some subject in philosophy	1
Paper on natural sciences and physics	2

Vivâ Voce.

	Relative Values.		Relative Values.
Philosophy	1	Physics and natural sciences	2
Political economy and politics	1	Contemporary history	1
Legislation	1	Industrial and commercial geography	1
Mathematics and bookkeeping	1		

APPENDIX II.

*THE SENSE OF BROTHERHOOD, AND ITS RÔLE IN THE SCHOOL.**

GENTLEMEN,

By inviting me to represent him and to take the chair at this ceremony, the Minister of Public Instruction has done me an honour which I was far from expecting. No doubt he felt that the mere fact that my life has been spent in teaching would in itself secure for me a warm welcome from your society and from the masters of our primary schools. My only claim upon your kindness is that I have made a careful study, from the standpoint of pure or applied philosophy, of the problems relating the moral instruction of our youth. Do you not, gentlemen, believe with Plato and with all philosophers that the future of a republic depends upon the education received by its children? In 1815, when Carnot, one of your founders, was discussing your statutes and devising plans for the spread of education, a courier brought the news of Waterloo. Carnot felt that the work begun should not be interrupted. No doubt he understood what Fichte understood when he was organizing primary instruction in Prussia after Jena: the fortune of war changes, material triumphs last but for a time and pass away; intellectual and moral instruction does not pass away; truth has no Waterloo. How many governments have passed away since that solemn hour! How many reforms have you initiated in the name of individual liberty--reforms whose success has been due to the skill and *esprit de corps* of your members--mutual instruction, choral societies, gymnastics in schools, regimental schools, popularizing of political economy, prizes for the best reading-books for schools, etc.! How many illustrious men have been in your midst! how many have presided over your meetings, from Jean-Baptiste Say, Maine de Biran, Cuvier, and Ampère, to Victor Hugo, who addressed the children gathered round this chair in the following words: "You are in the right road; the evil is behind you; the good is before you. Courage! Keep your eyes ever fixed upon the brightness of the dawn."

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* Delivered in 1886 at the annual prize distribution of the Société pour l'Instruction Elementaire.

The influence of this society is, I think, due to two factors without which no permanent union is possible: liberty for each, fraternity for all. You are thus bringing into play the two main divisions of the motto on our monuments and on the very walls of our schools; you have done in miniature what the country is wishing to do on a large scale. In these days, gentlemen, France may look back with pride at the liberty and equality she has already realized; but do we make the most of the principle of fraternity? We may be inclined to doubt it when we see around us political, economical, and religious schism. Fraternity is, however, an essential condition of life in a democratic community, and this I propose to show to the youth of your schools assembled here to-day. I want to show them, within the limits of a short address, that liberty and equality alone, unaccompanied by the spirit of fraternity, are not in themselves enough to make a strong and permanent democracy; liberty and equality make citizens, but fraternity alone can make a fatherland.

What is our country? You are taught that it is a great family, of which all the members are brothers; but social science, the natural history of society, goes further still—it establishes a closer bond between the children of the same country.

Now, social science teaches us that our country is nothing less than a great living body, like a plant or an animal, and that all its members are as necessary one to the other, and as dependent one upon the other, as are the members of our own bodies. This mutual dependence and necessity is called solidarity. In the living being, head, heart, lungs, all the organs live one by the other, and therefore should live one for the other; here, then, is, as it were, a preliminary sketch or outline of fraternity. Only, in the animal and plant, the solidarity of the organs is as yet material and forced; in this case imperious nature, as in the old apologue, says to the limbs, the stomach, the heart, the lungs, and all the organs, "Live in concord, in harmony, and fraternize, or you die!" In our country, on the other hand, the solidarity of all the members depends on their consent, and therefore deserves the more beautiful and more human name of fraternity. True fraternity is voluntary solidarity; it is the solidarity of hearts.

Without fraternity, liberty would become anarchy and the tyranny of the strong; without fraternity, equality would become a universal levelling down and degradation. We, as citizens of modern states, wish to be free, and we wish to be equal—a noble ideal! Liberty and equality are social advantages we exact from others, fraternity is the social virtue we exact from ourselves; liberty and equality are our rights, fraternity is our duty.

Be careful, therefore, not to understand by fraternity—as is too often the case—a kind of vague and quite platonic sentimentality; you must, on the contrary, recognize in it a scientific law which regulates the very constitution of a state, and especially of republican states. To the republican state fraternity is no mere luxury, it is a necessity. In some forms of government, union is made and maintained by force; in others union alone is able to create and to maintain power. The honour of the latter, and their peril, too, as Montesquieu pointed out, is to live by the civic virtues and to perish by the vices of their members. A monarchy may, strictly speaking, be content with a forced cohesion among its members; a monarchy may find a kind of material unity, an artificial and external support, in the immutability or heredity of certain institutions, in dread of the "powers that be," in subjection to tradition and privilege; to a monarchy fraternity is not indispensable. A republic, on the contrary, is compelled to maintain within itself a complete internal and moral unity, a vital centre towards which the wills of all may freely converge and in which they may be blended. Our country is therefore like a living fortress, every stone of which is kept in its place as it were by a single hand and a single will. Once hands are unclasped, hearts divided, and wills at variance, the whole building collapses from its walls and towers to its foundations. Ah! gentlemen, and you, children, who will be our country in the future, never forget that each of us keeps in its place some part of that great national building; our fraternal grasp must not be loosened, our wills must not be at variance, our hearts must remain united if France is to be great and free. To this end, let us translate fraternity from the realm of words to the realm of facts; let us give it its place everywhere, first in the moral and intellectual and then in the economic and politic order.

However high we may flatter ourselves we have attained in the intellectual order, we can escape neither solidarity, which is the natural law of minds, nor the duty of fraternity, which is its natural consequence. Have we a single idea which is absolutely our own, and of which the germ is not to be found in the generations that have preceded us? No; we can no more think alone than live alone; we find solidarity in all human intellects; through time and space they lend a mutual helping hand. In the past they have contributed to make your intellect what it is; in the present their acquiescence and very contradiction are necessary to it. A great reformer like Descartes in vain endeavoured to forget "all that others held before him;" he could not; he would have to forget the very words of his language in which we hear in lengthened cadence the echo of the centuries. It was idle for a great poet like Lamartine to say—

"Il faut se retirer, pour penser, de la foule,
Et s'y confondre pour agir."

No, we cannot withdraw entirely from the influence of the human race—even to think; our country and our race think in us and with us, and our loftiest ideas are precisely those in which the whole of humanity recognizes its own accents.

The man who is deaf to this voice and who rejects this fraternity of minds is self-exiled from an intellectual fatherland. Single in his opinions, alone in the pride of his own thoughts, he is intolerant of the thoughts of others, for he believes them entirely unconnected with his own. Intolerance is the egoism of thought.

In the domain of moral and religious belief the forgetfulness of intellectual fraternity is called fanaticism. It is a matter of indifference whether fanaticism is religious or anti-religious. It is always an affirmation or a negation elevated to the dignity of the absolute and only truth, in forgetfulness of the fact that it is only a part of, and not all, the truth, and that, as Herbert Spencer finely puts it, in every creed is a "soul of truth." It is this universal soul which should be presented to all children of the same country and which should animate them with the same spirit. In India, there once lived a sage, whose ideas were so broad and whose actions so noble, that after his death, the disciples of Mahomet and the worshippers of Brahma, disputing with each other the honour of having inspired his conduct, wished to divide his remains; the legend proceeds that on opening his tomb they found nothing but fruits and flowers; and these they shared. Let us be like this sage, children, and let us leave nothing behind us but fertile seed, flowers, and sweet scents; the best is what all can share, the purest ideas are those with which all can agree.

Diderot, a philosopher of the eighteenth century, to whom a statue has recently been erected, seems, in spite of his professions of materialistic faith, to have had a suspicion that even the most sceptical may find common ground with the faithful upon certain peaks of thought, and there unite with them in common invocation. Addressing God Himself, he says, as did Pascal and Kant, "Some affirm Thee, others deny Thee, but the idea of God should nevertheless inspire my conduct; God! my actions shall be as if Thou wert looking into my soul; I shall live as though in Thy presence."

And it is especially in dealing with the instruction of the young that we should endeavour to bring minds on to the common ground of the loftiest and most universal ideas. This you have clearly seen, gentlemen, and when your society introduced into the instruction given by the State that "religious neutrality" prescribed by the law, you understood the spirit of that law. The law equally excludes disguised hostility to the religious sentiment, contemptuous indifference, and that affectation of absolute silence which, as one of your most eminent members, M. Buisson, has put it, would be "the puritanism of neutrality." Under the various symbols of the infinite is a common basis of noble thoughts and generous aspirations from which the mind of a nation cannot be abruptly wrenched without injury to the principle of moral and intellectual solidarity. Even in morality is implied an idealism which is, moreover, necessary to education, especially in democracies and especially in France; for France is idealistic by instinct and tradition. It is the honour of France to have placed her ideal of justice and fraternity on a pedestal so lofty that every nation may see and recognize it—such an ideal as we gave to America; a statue of Liberty enlightening the world, will be reared aloft and receive the homage of all the navies of the earth.

If we pass from the moral to the economic and political order, we recognize once more the law of solidarity and fraternity. How easy it would be to seek and find a remedy for the industrial crises which cause so much suffering, if labour and capital, instead of fancying themselves enemies, were convinced of the necessity of their union! Similarly in the political order, party warfare tends to the dissolution of all government. What do parties degenerate into when they lose the sentiment of that patriotic agreement which should always underlie their very antagonism? They become factions. On the other hand, parties worthy of the name of constitutional parties, be they conservative or progressive, never forget that they need each other and that their country needs them all. There is no conservation possible without progress, for a nation which does not advance falls back, and falls back all the further because other nations are pressing on. On the other hand, no progress is possible without conservation; if the progressive spirit accelerates the motion of the whole, the conservative spirit is like the fly-wheel of a mass of machinery, regulating the motion of the whole by its inertia and resistance. Those who are impatient want to break abruptly with the past, forgetting that not abrupt change but continuity is nature's law—evolution, not revolution. Animals, like the batrachians, begin modestly, breathing under water through their gills; later they have lungs and breathe in air. Would you deprive them of their gills under the pretext that lungs are a superior organ?

As with organic progress, so social progress is made patiently and not impatiently. There is solidarity between the future and the past; the future can only issue from the past through the present. To long to outstrip the whole of humanity, to long to spread our wings and soar ahead, taking no count of those who drag wearily behind, is an illusion! Progressives, there is solidarity between you and tradition; free-thinkers, there is solidarity between you and believers; between you, *savants*, and the ignorant! It is idle to cry, "We are the forward party, we rise and soar towards the future, our pinions are spread in free space!" Ah! your pinions? Well, you cannot even start without the fulcrum of the rest of the body; the heavier mass that you scorn nourishes and sustains you. Without your fulcrum, poor wings, you will become lifeless matter, the sport of the winds, and your leap into space can only end in a speedy return to earth.

A nation is like a regiment on the march moving as one man. That is not a true fraternity which is ever launching itself further and higher, regardless of its fellows. True fraternity regulates its progress by the powers of the weaker, stretching out to them a helping hand, bringing them on and supporting them, nor does it hesitate to humble itself with those who are called the humble.

All of us, gentlemen, who wish for progress and no retreat, must endeavour to appease quarrels and dissension; internal discord would be the suicide of liberty. Let every child on leaving school take with him, not a spirit of false independence, but a professed sentiment of the bond which unites all natives of the same country; let him feel that, in civic as well as military life, discipline is a form of solidarity, and respect for the law a form of national fraternity. The nation itself is an army in which all of us, side by side, the same heart beating beneath each breast, march together towards the distant horizon and the unknown future. The greater the difficulties before us, the more necessary is union. When our soldiers landed on those distant shores from which we have recently welcomed their return, did they dispute over the different colours in our national standard? No; they looked at it and said, "That is the symbol of the country that is wherever we are, of the law made for all, of the fraternity which should unite us; wherever this flag waves I shall go; if I must die in its defence, I shall die. Forward!"

APPENDIX III.

ADDITIONAL NOTE UPON PROJECTS OF REFORM IN GERMANY AND IN FRANCE.

I SAID on p. 56 that no dictionary is allowed in the German *maturität* certificate; I should have added, *save a Latin-German dictionary for Latin prose.*

At the same examination I should have said, no questions are asked in physics or natural history, *except in the case of candidates educated at private schools or by private tuition.*

In the gymnasiums there are not *always* special teachers for science, but this specialization has been the rule for some time.

The recent speech of the young Emperor of Germany on pedagogic reform confirms, on the whole, my criticisms on the gymnasiums—abuse of philosophy, cultivation of erudition for its own sake, linguistic over-pressure, inadequacy of the course in moral, social, and economic science—and philosophy. But to find the evil is one thing, and to find the remedy is another. To imagine that we need only shout, "Down with Latin prose!" to deliver the new empire from the three curses mentioned in the emperor's speech—the "socialists" who threaten, the "unclassed" who complain, and the "journalists" who criticize, would be a great illusion. We have seen that as long as it is easier than ever to win diplomas without Latin and Greek, and that too after a course of study more attenuated and of shorter duration than before, the number of the "unclassed" will increase. As for the "journalists," their numbers will not decrease because their instruction has been less complete; the only change will be in the quality of their prose. Germany owes part of her power to the sound and permanent organization of her gymnasiums; if she now tries to "Americanize" them, that is her own affair; our business is to maintain in our democracy a true and complete literary, moral, and philosophical culture at as high a level as possible, while paying due regard to the lawful claims of science and its applications.

The proposals of the German commission are confined to increasing the *rôle* of German in the school course, without suppressing Latin and Greek, which are still to remain obligatory in the entrance examinations to the universities.

I owe the following communication to the kindness of a very distinguished teacher in one of the great Prussian gymnasiums:—

" Be careful to note that the commission is confined to ascertaining the opinion of our best pedagogues on various points. Its 'resolutions' are but the basis upon which a further commission of seven members will draw up a programme of reform. The more essential of the resolutions adopted by the commission are as follows:—

" A. Two classes of schools or institutions will be retained for the purpose of secondary instruction. (1) Gymnasiums, teaching Latin and Greek; (2) schools teaching no Latin (Latein lose Schulen; Ober-Realschulen and höhere Burgerschulen)." We know that there were a few higher Realschulen in which Latin was taught and not Greek. These bastard schools are to be suppressed, to the advantage of a real and complete classical training. " The number of lessons in the gymnasiums is to be is decreased, especially those in Latin and Greek. Latin prose to be suppressed; Greek exercises to be cut down; classical instruction in future is to be confined to an introduction to literature and the reading of various authors. Great stress is to be laid on the German languages and on German and modern history.

"B. Energetic reform of examinations, especially the *maturitätsprüfungen.* More Latin prose, more Greek translation. Latin no longer *spoken* in the *maturitätsprüfungen.* The masters of the highest classes are to judge from the reports on their pupils during the last years of school-life of their fitness for the university. The masters will be empowered to dispense with the examination in *history* and *religious knowledge* in the case of the best students.

" C. The *maturitätsprüfungen* certificate will give admission to all the faculties at the university. The certificate from the higher *Realschulen* will only give admission to the technical schools (*technische Hochschulen*). This *secondary* diploma may be later completed by a supplementary examination in Latin and Greek. Every student from the higher *Realschulen* may be admitted to examinations for the state services by a special examination *during his university career*, and mainly in Latin and Greek.

"As for the wider importance attached to German, we need only refer to a decree issued long since, but not put into universal practice. Instruction must be entirely directed to serve *as a basis for the knowledge* of German. We know that every lesson, Latin or Greek, may be directed to this end. This only depends on the method and the master. None of the serious charges levelled by the emperor at gymnasiums in general can affect the gymnasium to which I am at present attached. Our gymnasium at X—— has never lost sight of national or practical interests. This is well known. . . . Fortunately, this is not an isolated case; but on the other hand, many gymnasiums are behind us, and no longer supply the requirements of the present day. The emperor himself has called the schools that have already been reformed to the attention of those teachers entrusted with the duty of drawing up the new programmes. They are to visit and carefully inspect these schools and their methods.

"In addition, it is proposed to be more exacting and more severe with respect to the masters, and to require from them a more *ample* and more *general* training than hitherto. For this purpose the salaries are to be increased, it being admitted that the present salaries are hardly large enough."

These, then, are the reforms which have caused such commotion, and which our French reformers compare with their own projects. Latin and Greek are retained in the lyceums, and are obligatory for entry to the universities, medicine, law, pedagogy, holy orders, etc. It is true that students from the real schools are permitted to complete their diploma by Latin and Greek, in order to qualify for following a university course. This is the gist of the whole reform, and although it is certain that a loophole will be left for the admission of interlopers to the universities, they will be expected to pass in Latin and even Greek. All students will have to satisfy in—a German essay; Latin exercise; French exercise; mathematics; translation from Latin and Greek authors, etc. In a word, it is merely a question of quantity—less classics and more German.

With this reform—startling enough in the letter, but relatively cautious when put into practice—let us compare the ruin of classics which is being planned in France by the institution of a system of French instruction, shorter and easier, and sanctioned by diplomas of equal value to the classical diplomas.

We learn at the last moment that at present the authorities intend to found a system of "French classical instruction" covering five years of study and followed by an examination. Students who go on for a sixth year will go through a course of French rhetoric. Those who wish to pursue their studies still further, may take up philosophy or elementary mathematics. This but justifies all our fears. It is simply our present "special" instruction unjustly giving admittance to the classes of rhetoric and philosophy, and finally to the State schools. The inevitable result will be the desertion of the classics. Boys will say, "In five years I shall arrive at the same goal as my school-fellows—and that after superficial and easy work, without the patient effort required by Latin and Greek." Parents will say the same, and, in addition, they will have the very convenient option of withdrawing their children from school after five, or six, or seven years, as they please, and in each case after a complete course of instruction. If the children stay on to the seventh year, they will have the same titles and diplomas as those who have undergone a full classical training. It would therefore be a miracle if the long and laborious classical system found any partisans except a few bigoted admirers of our great national traditions. When the "special" system was really "special," it was intended for *special* classes and answered *special* needs, whence arose its *raison d'être* as a distinct and short system of instruction, constructed with a view to the average commercial and industrial requirements; but to turn it into a pseudo-classical system, equivalent to the real classical training in the mental culture given, will be a fatal argument against the study of the dead languages. If a system of "French" instruction, easy, simple, and short, is enough, what is the good of any other? And if it is not really an equivalent, who will be any the wiser? The "really classical *élite*" will speedily be reduced, as I have shown, to an insignificant and impotent minority, or confined to the clerical schools, which are already delighted at our blunder. As for the class in philosophy, it will be idle to open it to all comers—even to those who are unfit for it from want of previous classical training—for very few will be heroic enough to attend it, and the rest will take up mathematics or physics as more "useful" subjects, and straightway our State schools will be crowded with students who will be destitute of any sound culture. Science will establish its supremacy at the expense of literature and philosophy. The teachers, and perhaps the lawyers, of the future will alone remain faithful to Latin and philosophy under the new *régime*. Then it will be discovered that after all Latin and Roman law are not necessary to lawyers, and that one can become a teacher after a purely French training. The ruin of our classical instruction will at last be complete. France will become a great Belgium.

When we have a living organism which gives ample proof of its vitality—as did our system of secondary education before it was tampered with—is it not pure madness to destroy it or to endanger its vitality, under the pretence of seeing if another organism, as yet unborn, would not do work better? We know what we shall lose, and we cannot see what we shall gain. There is no doubt whatever that it is not necessary for every one to have a classical training, but those who have received a classical training should not be placed on an equality with those who have not. Germany sees this clearly enough; we must not make this mistake in France.

INDEX.

ABITURIENTENEXAMEN, 56, 261, *et seq.*
Æsthetics, 226, *et seq.*, 304
Algebra 62, 302
Ampère, 166
Angiulli, 248, 267
Archimedes, 47
Arithmetic, 301
Army, remission of service in, 146
Arnold, Matthew, vii.
Astronomy, 74
Auto-suggestion, 12
Average, law of regression to, 18

BAIN, Professor, xi., 63, 94, 109, 231
Bernard, Claude, 148, 166, 200
Bert, Paul, 167, 189, 224
Berthelot, 79, 167
Bigot, viii.
Biot, 73, 93, 166
Bismark, 50
Blanchard, 65
Boisser, 137, 144, 229
Bossert, 155
Botany, 39, 301
Bréal, 144, 227, 236
Browning, 160
Brunetière, 94, 123, 168
Buisson, 182, 320
Burdeau, 229
Butler, Bishop, vi.

CESCA, 127
Chemistry, 63, 300
Chevreul, 11
Chrystal, Professor, 134
Civic instruction, 204, *et seq.*, 306
Classics, a pledge of disinterestedness, 8
——, their influence on French literature, ch. ii., 105–135
——, value and necessity of, 133, 303
——, reforms in favour of, 188
——, modern, 138
Colajanni, 22
Collins, Churton, 112
Comte, 68, 81, 96, 105
Condillac, 287
Conduct, 16
Cosmography, 77, 302
"Cramming," 271
Crime, 22, *et seq.*
Crookes, 289
"Cycles," instruction in, 148

D'ALEMBERT, 88
Darwin, 3, 31, 272
Daryll, 31
Delboeuf, 13
Democracy, 9
Descartes, 37, 47, 71, 75, 82, 98, 103, 200
Dietz, ix.
Doctors, philosophy useful to, 254, *et seq.*
Dubois-Reymond, 69, 88, 167, 177
Dumas, 298, 302
Duruy, 137, 164

EDUCATION, power of, 10, *et seq.*
—— and evolution, 33
——, a modern, 136, et seq.

Eloquence, 238
Environment, adaptation to, 8
Ethics in education, 193, *et seq.*
Euclid, 47. *Vide* Geometry
Evolution and education, 33
—— in pedagogy, 94, *et seq.*
——, mental, 102
Examinations, 261, *et seq.*

FANATICISM, 319
Fascination, 11
Ferneuil, 176, 280
Fichte, 49, 92,
Flaubert, 119
Forces, idea-, power of, 10, *et seq.*
Formal, culture, 57
Formulas, 16
Fornelli, 94, 121, 123
Fouillée, ix., xi.
Frary, ix., 94, 125, 157, 218, 283
Fraternity, 317, *et seq.*
Frederick III., 51
French art, 8, 243
—— language, and Latin, 114, *et seq.*
—— schools, lyceums, viii.
—— écoles spéciales, viii.

GALILEO, 63, 75
Galton, 18
Geography, 304
Geometry, 302
German Emperor, 51
—— universities, 266
—— schools. *Vide* Gymnasium, Realschule
Glazebrook, vi.
Goering, 104
Grad, 50
Greard, 137
Greek. *Vide* Classics
Guyau, ix., 1, 13, *et seq.*, 30, 35, 70, 94, 114, 211, 237, 273
Gymnasium, viii., 56, chs. iii. and iv., 174-192, Appendix III.

HERACLITUS, 2
Herbart, 97
Hereditary nobility, 42
Heredity, 18
History, 110, 218, *et seq.*, 303. *Vide* Natural

Hoenig, 49
Humanities, 5, 105, *et seq.*, classical, bk. iii., *passim*
——, modern, 138, scientific, bk. ii., *passim*
Huxley, 37, 63, 82
Hypnotism, 12, *et seq.*, 268

IDEAS, force of, 10, *et seq.*
Idealism, necessary to science, 37
Idleness, unpatriotic, 215
Instruction, results of, 29
——, objects of, 44
——, cycles of, 148
——, aims of secondary, 87
——, —— primary, 55
——, civic, 204
——, historical and political, 218
——, æsthetic and literary, 226, *et seq.*
——, "special," 174
Intellectual education, objects of, 33, *et seq.*

JAMES, W., 268, *et seq.*
Jesuits, the, 57
Joly, 23

KANT, 76, 92, 102, 211
Kepler, 36
Knowledge, its unification, 195

LACHELIER, 55, 94, 116, 234, 246, 290
Lafitte, 42
Language, a social force, 15, *et seq.*, 99
——, modern, 154, *et seq.*, 303
Laplace, 166, 198
Latin. *Vide* Classics
Lavisse, 219
Lebon, 157
Legislation, 307
Leibnitz, 47, 62, 98, 200
Liébault, 13
Liégeois, 13
Literature, 99
——, æsthetics and, 226, *et seq.*
——, debt of modern to classical, 112, *et seq.*
Locke, vii. 287
Lockroy, 160
Logic, 312

MANEUVRIER, 107, 150, 182, 239, 246
Marion, 193, 204
Mathematics, 61, *et seq.*, 302
Maximation, 17, 208
Memory, overloaded, 72
——, process of, 271
Mental philosophy, 311
Methods, 93, 235
——, passivity in, 200
Mill, J. S., 68, 219
Modern languages, 153
—— systems of education, bk. iv., 137, *et seq.*
Moltke, Von, 51
Monodeism, 12, *et seq.*
Montgolfier, 47
Morals, 34, 195, 209

NATURAL HISTORY, 65, 300
Naturalist school in pedagogy, 231
Nature acts for the race, 32
Newton, 37, 47, 75, 98
Nobility, an hereditary, 42

ORGANIZATION of subjects, 5
Over-pressure, 29, *et seq.*, 201, 275

PASCAL, 37
Passivity, 200, 235
Patriotism, 214
Pestalozzi, 231
Philosophy and secondary instruction, 87, 247, *et seq.*
—— higher education, 264, *et seq.*
—— necessary for the teacher, 256, *et seq.*
—— in education, 193, *et seq.*
Physical education, 28, *et seq.*
Physics, 62, 299
Physiology, 65, 300
Poetry, 238
Political instruction, 218, *et seq.*, 306
—— economy, 305
Population, decrease of, 52
Precocity, 101
Primary instruction. *Vide* Instruction
Proudhon, 49
Psittacism, 62
Psychology, 110, 268, *et seq.*
Pythagorizing, 84

RABIER, 94, 108, 175, 234
Race, education of the, ix., *et seq.*, 2
Ravaisson, 94, 232
Real-gymnasium, 174–192
Realism and the realschule, 179
Realschule, viii., 131, 150, 167, 174–192
Regression to the average, 18
Religious *v.* moral instruction, 212, *et seq.*
Renaissance, physical, 1
Renan, 34, 42, 94
Renouvier, 94
Ribot, 26, 42
Rotation of crops, xi.
Rousseau, 49, 231

SANSCRIT, 117
Savants, 93, 252
Schaarnhorst, 50
Scherer, 285
Schools. *Vide* Gymnasium, Realschule, etc.
Schopenhauer, 32
Science scholars, after-career of, vi.
——, link between literature and, 4
——, faults in teaching of, 60
——, educative power of, 36
——, social. *Vide* Social
——, the humanities in, ch. iii., 71–93
——, objective character of, 34
——, religious, 82
——, limits of, 89
——, organization of, 91
——, teachers of, 298
Secondary instruction. *Vide* Instruction
Selection, 3
—— of genius and superiority of, 7, 41, *et seq.*
——, psychological, ch. i., 10–27
——, social, ch. ii., 28–32
——, sexual, 31
Sentiments, the, 15, 34
Socialism, 51
Social science, 195, *et seq.*

Sociology and education, 1
Solidarity, sentiment of, 321
Somnambulism, 12, *et seq.*
Specializing, 5, 67
Stature, average, 18
Stendhal, 241
Stephen, Leslie, 22
Suggestion, 12, *et seq.*
Sully, 28, *note*

Table-turning, 11
Taine, 232
Tarde, 23, 110, *note*
Teachers, influence of, 128
——, philosophy and, 257, *et seq.*
Tennyson, 160
Thamin, xi.
Thiers, 222
Thought-reading, 11
Traditions, 110
Translations, value of, 118, 168, 23
Tyndall, xi., 82, 90

Unity in secondary education, 13
Utilitarianism, 9, 47, *et seq.*

Vaihinger, 97
Vauvenargues, 86
Verses, 118
Vico, 34, 101
Virchow, 90
Vogt, 72, 91
Voisin, 13
Völkerpsychologie, 110

Woman, education of, 171
—— and natural selection, 31

Zeller, 267
Ziller, 98

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INDEX OF AUTHORS.

PAGE
Arnold-Forster — Handbook to Report 10
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Bell—Name above Every Name... 3
Benson & Tatham—Men of Might 3
Burgess—Political Science ... 9
Bulow—Froebel's Reminiscences.. 12

Clark—Modern Distributive Process 9
Philosophy of Wealth 10
Clifford—Love-Letters 6
Calkins—Sharing the Profits ... 10
Campbell—Botany... 10
Carus—Soul of Man 11
Homilies of Science 11
Claude—Twilight Thoughts ... 13

Dickens—The Children's... ... 13
Dante—Eleven Letters 2
Davidson—Handbook to Dante... 9
Dunbar—U.S. Laws of Currency, &c. 10

Forum 14
Fouillée—Education 3

Greenstreet—Fouillée's Education 3
Gardner—Friends of Olden Time 6
Garnett—English Prose Selections 9

Hervey—Dark Days in Chile ... 4
Hole—Book about Garden ... 1
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PAGE
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Animal Life 5
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